

NEW
IMPROVEMENTS
OF
Planting and Gardening,
BOTH
Philosophical and Practical:

Explaining the MOTION of the SAP and
GENERATION of PLANTS.

In THREE PARTS and a KALENDAR, viz.

I. Of the Generation of Plants, Soils proper for their Nourishment, and Composts for forwarding their Growth: Of Timber-Trees and Under-Wood, and the Method of Planting an Acre of Ground with them, with the Profits arising from that Plantation in 9, 17, and 25 Years.

II. Of a new Invention for the more speedy Designing of Garden-Platts: Of Ever-Greens, and Flowering-Trees and Shrubs, their Culture and Use in Gardens: Of Perennial Flowers, and Bulbous or Onion-rooted Plants, &c.

A KALENDAR, Directing what is necessary to be done every Month, in the Kitchen-Garden, Fruit-Garden, Nursery, Management of Forrest-Trees, Green-House and Flower-Garden; and for the Making and Ordering of Hop-Grounds: With the Design of a Green-House, after a new Manner, for keeping Exotick Plants, contrived by Seignior Galilei of Florence, finely Engraved.

III. Of Fruit-Trees; Observations and Experiments relating to their Propagation and Culture: Of Blights or Blasts: Of the Kitchen-Garden: Of Engines for raising of Water, with Observations and Experiments for Meliorating Water for the use of Gardens, and of the Green-House and Exotick Plants.

By RICHARD BRADLEY, F. R. S.

The Fourth Edition, adorn'd with COPPER-PLATES.

DUBLIN:

Printed by and for GEORGE GRIERSON, at
the Two Bibles, in Essex-Street. M.DCC.XX.

Phosphorus and Potassium

Three Parts and a Conclusion, viz.

the Method of Training in Arts of Growth was
known: Of the Three and I will now
discuss the Method of Training in Arts of Growth was
known: Of the Three and I will now

It is a new direction for the more freely



56

SEP 19 1964

1910

...the ... of the ...

1911

Engraved.

Issued to the Public by the

for Mchonging, which for the life of Gordin, and

11

BY KIRCHENBERG, R. A. NO. 10

[illegible]

11870

Delivered by and for Brown & Co.

the two Rivers in Essex Street, London, N. 1.

NEW
IMPROVEMENTS
OF
Planting and Gardening,
BOTH
Philosophical *and* Practical:
Explaining the
MOTION of the SAPP
AND
GENERATION of PLANTS.

With other Discoveries never before made Publick,
for the Improvement of FOREST-TREES,
FLOWER-GARDENS, or PARTERRES;
with a New Invention whereby more Designs
of GARDEN-PLATTS may be made in an
Hour, than can be found in all the Books now
extant. Likewise several rare Secrets for the
Improvement of FRUIT-TREES, KITCHEN-
GARDENS, and GREEN-HOUSE PLANTS.

*Agite, O Adolescentes, & antequam Canities vobis
obrepât, Stirpes jam alueritis, quæ vobis, cum in-
signi utilitate, delectationem etiam adferent.*

Pet. Bellonius, de neglectâ Stirpium culturâ.

PART I.

The Fourth Edition Corrected.

By RICHARD BRADLEY, Fellow of the
ROYAL SOCIETY.

DUBLIN:

Printed by and for GEORGE GRIERSON, at
the Two Bibles, in Essex-Street. M.DCC.XXI.

Printed by and for George GILBERTSON, at
the Free Press, in Essex-street, M.DCCC.XXI.

CONTENTS

Of the FIRST PART.

CHAP. I.

A *Paraller between Plants and Animals ; with an Attempt to prove the Circulation of the Sap in Vegetables,* p. 1.

CHAP. II.

Of the Generation of Plants, p. 7

CHAP. III.

Of Soils proper for the Nourishment of Plants, and Composts for forwarding the Growth of Plants, p. 17

CHAP. IV.

Of Timber-Trees and Underwood, and of Dressing and Cleaning of Woods, p. 24

CHAP.

CONTENTS, &c.

CHAP. V.

The Method of planting an Acre of Ground with Timber-Trees and Underwood; with the Profit which will arise from that Plantation in nine Years, seventeen Years, and twenty five Years after Planting. p. 36

Of the First Part.



CHAP. II.

Of the Generation of Plants.



CHAP. III.

CHAP. IV.

CHAP. V.



To the Most High, Puissant, and Most Noble
P R I N C E,

H E N R Y,

Duke, Marquis and Earl of *Kent*, Earl of *Harrold*, Vis-
count *Goodrich*, Baron *Lucas* of *Crudwell*, &c. Lord
Steward of his Majesty's Household, Constable of
Windsor Castle, and Lord Warden of *Windsor* Fo-
rest, Lord Lieutenant and *Custos Rotulorum* of the
County of *Bedford*, One of the Lords of his Majesty's
Most Honourable Privy Council, and Knight of the
Most Noble Order of the Garter.

M Y LORD,



OUR Grace's Generous
Encouragement of what-
ever may advance the
Good of your Country, gave me
the first Thought of inscribing
these Papers to your Great Name;
and it is with Pleasure that I men-
tion your Grace's Permission to
make Use of that Patronage,
A which

The Dedication.

which my Ambition first led me to. I am too well acquainted with your great Attainments in all Kinds of Learning, to offer any conjectural Projects, or vain Hypotheses, to so penetrating a Judgment: These Sheets are the Result of many Years Experience, the only Foundation which such accurate Philosophers as your Grace will allow for the Improvement of Natural Knowledge. It is a great Happiness, when Men of your exalted Quality, and large Fortunes, honour the Sciences, not only with your Protection, but by being Masters of them, become their Ornaments. Thus, *my Lord*, You are to our Studies in a Way of Art, what the *Sun* is to the Subject of them in a natural Way, which
tho,



The Dedication.

tho' placed at infinite Distance
from the *Plants* of the *Earth*, yet by
its Influence, gives them Warmth,
Action, Life and Beauty.

May it please your Grace,

Instead of enumerating the several Virtues of your Illustrious House, and your Own, which the Publick know already, I beg Leave to Congratulate my Country upon the Noble Spirit your Grace has always shewn in doing it the most important Services. The Men of Business, and the Men of Letter, the *State*, and the *Societies* of Learning, are equally your Debtors. For my own Part, tho' the meanest among the latter, I shall endeavour, from Your Influence, to prosecute the Subject I have here begun, with

The Dedication.

new Vigour, humbly hoping to
approve my self, what I most
desire to be thought,

Your GRACE'S

Most obliged, and most

Obedient, Humble Servant,

RICHARD BRADLEY.



THE P R E F A C E.

S there is no Subject of more General Use and Advantage than the Cultivation of Land, and the Improvement of the Vegetable World; so there is none which has been treated of more largely, and fall under such a Variety of Pens of all kinds. The Publick, which is generally so good Natur'd on this Occasion as to accept and encourage any Thing that looks towards the bettering their Fortunes, has never been so much balked in their Expectations, as in Books of Agriculture. The Reasons of which are, that some of these Writers have bestowed their Pains in Collecting from Antiquity and foreign Soils, and thought they had perform'd great Matters, by heaping together a load of Observations from Varro and Pliny, without carefully considering where in their Experiments differ from the Genius of our Soils and Climates: Others have employ'd their Time in Copying from our old English Systems, and these have generally transcrib'd one another without the least Acknowledgment of their Thefts, or adding one single Improvement to the Knowledge of their Forefathers. And indeed, how should it happen otherwise, when the Undertakers of this Subject, have generally been either Covetous or Illiterate Gardeners and Planters; some, that if they knew any Thing New or Curious, had not the Spirit to communicate their Notions, and some that jogged on in the old beaten Track, without any Ambition to excel their Predecessors? We have now and then, it is true, a Gentleman studious and capable of ob-
liging

liging the *World*, free from the narrow *Views* of *Self-Interest*, and employing his *Hours* for a more diffusive *Benefit* than the *Culture* of his own private *Estate* or *Garden*; an *Evelyn*, a *Nourse*, and a *Laurence* have given us something equally new, and just, built upon *Experiment*, upon the beneficial *Subject* of *Plantation*. But what are these, when compared to that useless *Number* of unimproving *Authors*!

Apparent rari nantes in gurgite Vasto.

For my own part, I must confess that I have been a long time waiting for a Compleat System of Agriculture, and have read many a fair promising Title, but have found nothing within but a barren Bulk of old Repetitions. This has excited me, who from a natural Bent of Genius, even from my Childhood, have had a Passion for Gardening and Planting, to reduce all my Notions and Observations into a regular Form, and endeavour to supply this General, and so much lamented Defect of other Writers. I shall think without Vanity, that I may do my Country no inconsiderable Service, if I can excite the Nobility and Gentry of the Kingdom to early Plantations upon their Estates, which I shall prove will not only redound to their own private Profit, but the Advantage of the Nation in General. The Disuse of this Method was complained of by Mr. Evelyn, who says very justly, There is no Part in Husbandry, which Men commonly more fail in, neglect, and have Cause to repent of, than that they did not begin Planting betimes. And indeed such Persons who have been deaf to Demonstration at the first Possession of their Estates, and are afterwards convinced of the vast Advantages to be reaped by an early Plantation, either from the Experience of their Neighbours, or themselves, must have a very pungent Retrospect upon this Occasion. Every Man is naturally willing to enjoy the Profits of the Works, (as one may call them) of his own Hands, and he therefore who begins at Fifty to be sensible that he has lost many a fair Thousand, by his neglect of improving his Estate between Twenty and his present Age, is to himself indeed a Loser, but a Warning to others to avoid that Folly.

THE PREFACE.

iii

To begin then as methodically as I can, and take in all that relates to this Subject, I shall fairly tell my Reader what he is to expect in this First Part, and I hope he will pardon me if I mix a little Natural Philosophy, such as is plain, easy, and grounded on my own Experience, with these Observations on Gardening and Planting.

I shall then advance (what I think) a new System of Vegetation, and endeavour to prove that the Sap of Plants and Trees Circulate much after the same manner as the Fluids do in Animal Bodies, which may be one Argument to shew the beautiful Simplicity of Nature in all her Works.

The Generation of Plants will next be consider'd, and the Manner how their Seeds are impregnated, a Discovery which I made some Years since; this will be of great Use to all Planters, by directing them in the proper Choice of their Seeds.

The Difference of Soils will make another considerable Article, what are Natural to each Tree, and how all kinds of Soils may be mended, alter'd, or improv'd by proper Mixtures with each other; a part of Husbandry that has, as yet, been but slightly touch'd upon, and yet the Whole depends chiefly upon it.

The Method of Dressing Woods, and making Plantations of Timber-Trees, naturally follows; wherein I shall propose a new, easy, and Practical way of raising Woods, with very little Expence, which I hope will take off those Fears which the Generality are taught to conceive of the present great Charge of New Plantations.

And for the further Encouragement of all Gentlemen who propose an Advantage from their Woods, I shall add an Estimate of the Profits that will arise from an Acre of Land planted with Timber and Underwood in nine Years, seventeen Years, and Twenty five Years after Planting, which I shall prove will amount to above 250l. beside the Timber growing.

Having now laid my Scheme before the Publick, I have nothing more to do than to invite all Gentlemen who are Curious in this Way, to communicate their Observations upon any of these Heads, and whether they agree with, or contradict my own, I shall think my self obliged to do them

The PREFACE

Justice in my following Papers. I can only say, that this is a Subject I have long study'd and experienc'd, and a slight or single Observation ought to be no Foundation to build a new System upon, or overthrow an old one. An Undertaking of this kind, which aims directly at the Good of others, I hope therefore will meet with little Censure, and less Discouragement.



THE

I have now laid my Scheme before the Publick, I have nothing more to do than to invite all Gentlemen who are desirous to see the World, to communicate their Observations upon any of the Heads, and whether they will write or not, I shall think my self oblig'd to do them Justice.



NEW
IMPROVEMENTS
OF
Planting and Gardening,
BOTH
Philosophical and Practical.

CHAPTER I.

A Parallel between Plants and Animals; with an Attempt to prove the Circulation of the Sap in Vegetables.



Vegetation, in what-ever Degree I shall treat of it, is equally depending on the Order of Nature. Whether I speak of *Trees, Shrubs, or Herbaceous Plants*, their Principles are equally the same; that is to say, they all alike draw their Nourishment by way of their *Roots*; which Nourishment is convey'd through proper Vessels into the *Stem, the Branches, Leaves, Flowers and Fruit*.

Now that I may more easily explain by what Means every *Plant* receives and distributes its Nourishment to the several *Parts* of it, give me leave to draw a *Parallel* between *Plants* and *Animals*, that thereby the Nature of *Plants* may be the better understood.

The

The many curious Observations which have been made concerning the Structure of *Animal Bodies*, and what *Malpigi*, *Dr. Grew*, and my self have remark'd in the Structure of *Vegetables*, may ascertain to us, that Life whether it be *Vegetable* or *Animal*, must be maintain'd by a due Circulation and Distribution of Juices in the Bodies they are to support; we have all alike discover'd (with the help of *Microscopes*) the several Vessels and other Parts which compose a *Plant*; but I cannot agree in Opinion with the Authors I have mention'd, concerning the Course of the Juices thro' the Ducts and Channels which we have discover'd. It would be needless for me in this Place to relate their several Opinions, which would swell this Treatise to too great Bulk; their Works may be perused by the Curious; I shall proceed to explain, that the *Sap* circulates in the Vessels of *Plants*, as the *Blood* doth in the Bodies of *Animals*.

And that this new System may be the better understood, I think it proper in this Place to give a short Description of the Vessels in *Plants*, and their Situation. First then, the *Root* of a *Plant* is of a spongy Nature, ready to admit into it such humid Particles as are fitted (in the Earth, by a certain Temperature of Air) to be received into its Pores: And we may observe that the various Qualities of different *Plants* depend chiefly on the different Size of the Vessels and Pores in their *Roots*, by which they receive their several Nourishments.

Secondly, We must understand that the Wood of every *Plant* is composed of Capillary Tubes, running Parallel with each other, from the *Root* (upright) through the *Trunk*. Their Cavities are so small that they are hardly to be discern'd by the natural Eye, unless in a piece of *Charcoal*, *Cane*, or *Oaken Board*: These Vessels renew and augment themselves every Year, as we may observe by cutting a *Tree* horizontally, which will discover to us the Latitudinal Shootings, and the Annual Additions of these Pipes, and for which Reason the *Trunks* of *Trees* increase in their Circumference. These Tubes for Distinction sake I shall call *Arterial Vessels*.

PLANTING and GARDENING.

Vessels. For it is through these the *Sap* rises from the *Root* in fine *Vapour*; for their Cavities are so small, that it would be impossible they should admit any thing whose Parts were so large as those of a *Liquor*.

Thirdly, The Passages, or Pipes, by which the *Sap* returns downward, are much more open than the former, and are capable of receiving a *Liquor* into them; these are placed immediately on the Outside of the *Arterial Vessels* between the *Wood* and inner *Bark*, and lead down directly to the Covering of the *Root*. They perform the Office of *Venus*, and contain the liquid *Sap* which is found in *Plants* in the Spring and Summer Months.

Fourthly, The *Bark* of a *Tree* is of a spongy Texture, and by many little Strings which pass between the *Arterial Pipes*, corresponds with the *Pith*. And,

Fifthly, The *Pith* is composed of little transparent Globes chain'd together in like manner with those Bubbles which compose the Froth of any *Liquor*.

In fine, a *Plant* is like an *Alembick*, which distils the Juices of the Earth; as for Example,

The *Root* having suck'd in the Salts of the Earth, and fill'd it self with proper Juices for the Nourishment of the *Tree*; these Juices then are set in Motion by Heat, that is, they are made to evaporate into *Steam*, as the Matter in a Still will do when it begins to warm; now as soon as this *Steam*, or *Vapour*, rises from the *Root*, its own Natural Quality carries it upwards to meet the Air; it enters then the Mouths of the several *Arterial Vessels* of the *Tree*, and passeth up them to the Top, with a Force answerable to the Heat that puts it in Motion; by this Means it opens (by little and little, as it can force its way) the minute Vessels which are roll'd up in the *Buds*, and explain them by degrees into *Leaves*.

But as every *Vapour* of this kind when it feels the Cold will condense and thicken into a Water, so when the *Vapour* which I mention to rise thro' the *Arterial Vessels* arrives at the extream Parts of them (*i. e.*) the *Buds* of a *Tree*, it there meets with Cold enough to condense

4 New IMPROVEMENTS of

condense it into a *Liquor*, as the *Vapour* in a Still is known to do.

In this Form it returns by means of its own Weight to the *Root* down the *Vessels*, which do the Office of *Veins*, lying between the *Wood* and inner *Bark*; leaving, as it passeth by, such Parts of its Juice as the Texture of the *Bark* will receive, and requires for its Support.

It may be wonder'd at, that I have not taken more Notice of the *Pith* which has been always accounted the principal Part of a *Tree*; to which I shall only answer at this Time, that many *Herbaceous Plants* have not any *Pith*, and that I have seen the *Trunks* of large *Trees* destitute of it, and they have yet continued to grow and to bear *Fruit*, so that the Order of *Vegetation* may be explain'd without it; and indeed was I here to take Notice of the several Particulars in *Plants*, I might swell this Treatise into a large Volume; but I am clearly of the same Opinion with him that said, *Magnus Liber Magnum Malum*; and therefore shall confine myself in this Work to such Relations only, as I hope may be useful.

But to proceed: The following Experiment of the most Ingenious Mr *Laurence*, which he has mention'd in his *Clergyman's Recreation*, relating to the *Jessamine* may convince us of the Certainty of the *Sap's* Circulation in *Plants*. I shall give it in his own words, "Suppose a plain *Jessamine-Tree* spreading it self into two or three *Branches* from one common *Stem* near the *Root*. Into any one of the *Branches*, in *August*, inoculate a *Bud* taken from a yellow strip'd *Jessamine*, where it is to abide all Winter, and in the Summer, when the *Tree* begins to make its Shoots, you will find here and there some *Leaves* ting'd with Yellow, even on the other *Branches* not inoculated, till by Degrees, in succeeding Years, the whole *Tree*, even the very *Wood* of all the tender *Branches*, will be most beautifully strip'd and dy'd with Yellow and Green intermix'd: He adds, that tho' the inoculated *Bud* should not shoot out, or that it should live but two or three Months, and after that happen to die or be wounded by Accident, yet even in that little Time it will have

PLANTING and GARDENING.

5

“ have communicated its Virtue to the whole *Sap*; and
 “ the *Tree* will become entirely strip’d.” And this Ex-
 periment my self and several others have made several
 Years ago; which gave me the first Hint of the *Sap*’s
 Motion, and put me upon further Enquiry; it may, I
 hope, satisfy the Curious.

The Motion of the *Sap* continues in a *Plant* so long
 as the Sun’s warmth can keep it in a fluid State, but is
 condensed or thicken’d by a Winter’s Cold, and is there-
 by changed into the Consistency of Gum, and being thus
 stagnated, cannot move any more ‘till the Warmth of
 the following Spring, or some artificial Heat rarifies it
 into its former liquid State.

It then renews its former Vigour, and pushes forth
Branches, *Leaves*, &c. But we must not suppose it is
 only the melted *Sap*, that was thicken’d in the *Tree*
 during the Winter, which does that Office of *Germina-*
tion, the *Root* has not been idle while the *Branches* have
 stood still, it has not lost the Moisture of the preced-
 ing *Autumn*, to impregnate and furnish it self with pro-
 per Salts or Nouriture, from whence the *Tree* is to be
 maintain’d. Here is a Supply laid in to furnish Food
 for the Summer, as some industrious Animals lay up
 their Store to nourish themselves in the Winter.

In the next Place it may not be amiss to confute a
 common Opinion, *That the Sap returns to the Root in*
Winter; for if it did so, how comes it that *Trees* which
 are cut down in *November* and *December* will put forth
Branches and *Leaves* the following Spring, altho’ they
 have no Root or Earth to feed them? This plainly shews
 that the *Sap* is condensed or thicken’d in the *Tree* du-
 ring its circulative Course, by extream-Cold, and re-
 mains in that gummy State, ‘till the warmth of the
 Spring (as I have already said) liquifies it, and by the
Vapour which must then arise from it, the Buds are
 push’d forth, so long as there is Matter remaining in the
 Trunk sufficient to furnish them.

And now since it appears from what has been said,
 that *Plants* have a Circulation of *Sap*, and proper Means
 whereby to supply themselves with Food, let us consider
 whether

whether Plants in their several Kinds do not require different sorts of *Food*, one from another, like various sorts of *Animals*, which differ in their *Dyets*.

First then, *Land Animals* may be liken'd in general to those *Plants* which are call'd *Terrene*, for that they live only upon the Earth, such as *Oaks*, *Beech*, *Elm*, &c.

Amphibious Animals, such as the *Otter*, *Beaver*, *Tortoise*, *Frogs*, &c. which live as well on the Land as in the Waters, may be compared to the *Willow*, *Alder*, *Mints*, and such others.

The *Fish Kind*, or *Aquatick Race*, whether of the *Rivers*, or the *Sea*, are analogous to the *Water Plants*, such as *Water Lillies*, *Water Plantains*, &c. which only live in *Rivers*, or *Fresh Water*, or the *Fucus*, *Coral*, *Coraline*, &c. which are *Sea* or *Salt Water Plants*, and not any one of those will live out of its proper Element. From whence we may conclude, how improper it would be to plant a *Water Lilly* in a dry sandy Desert, or an *Oak* at the Bottom of the Sea, which would be just as unreasonable, as if we should propose to feed a *Dog* with *Hay*, or a *Horse* with *Fish*; however, this Rule of Nature has been so little observ'd, even by some of our greatest *Planters*, that we can hardly boast of good Success in one out of five *Plantations* that has been made.

But I shall beg Leave to remark yet further, That as the several *Land Animals* have their respective *Dyets*, so have the *Terrene Plants* likewise their several *Soils*, from whence they draw their Nourishment; as some *Animals* feed on *Flesh*, others on *Fish*, *Roots*, *Leaves*, *Grain* or *Fruits*, so do we find that some *Plants* love *Clay*, others a *Loam*, *Sand*, or *Gravel*, &c. Nor is this all we ought to observe, we must consider likewise how beneficial to every *Plant* is a right Exposure, whether in a *Vale*, the Sides or Tops of *Hills*, exposed to the *South* or *North* Winds, whether inland, or near the *Air* of the *Sea*; for it is a proper *Air* that keeps a *Plant* in Health, and fits it to receive its Nourishment; and a certain Degree of *Warmth*, peculiar to each Kind of *Plant*, is likewise worth our Enquiry, for it is a *Warmth* natural to each *Plant* that puts its *Juices* in their proper Motion,

Motion, as the same Degree of Heat will not melt every Kind of Mixture, but this may be more fully explain'd in another Place; in the mean while I shall proceed to examine, in the next Chapter, by what Means *Plants* are capable of *Generating*, and to explain the *Uses* of that Discovery.

CHAP. II.

Of the Generation of *PLANTS*.

IN the foregoing Chapter I have given my Reader such Hints as may serve to explain my *System of the Circulation of Juices in Vegetables*, and have endeavoured to show that *Plants* are somewhat analogous to *Animals*; I shall now proceed to offer another Discovery, as new as the former, and depending on it; which I conceive will be of extraordinary Use to such as raise Plantations from *Nutts*, *Mast*, or any other Kind of *Seed* or *Grain*. And altho' in this Treatise I have propos'd to give some Directions tending only to the Improvement of *Forest* and *Timber-Trees*, yet I hope to be excus'd, if in the Explanation of this wonderful Mystery of the *Generation of Plants*, I shall be forced to introduce such Kinds of *Plants* as are not to be found in *Forrests*, and to make some of my Experiments in the *Orchard* or *Kitchen-Garden*.

Moses tells us in his Account of the *Creation*, That *Plants have their Seeds in themselves*; that is, every *Plant* contains in it self Male and Female Powers; the Text he has given us seems to be explain'd by this Discovery, and may lead us to consider that *Plants* wanting local Motion, require therefore this Union of *Sexes* in themselves, by which Means they may generate without the Neighbourhood of other *Plants*; they are in this Respect like *Muscles*, or other immoveable Shell-fish, who are *Hermaphrodites* of this Kind, having their Propagation without the Help of one of the same Species. I mention *Muscles* and other immoveable Kinds of *Shell-Fish* as a particular Kind of *Hermaphrodite*, for those which have local Motion, such as *Snails* and *Earth-Worms*,
when

when they couple with one another, at once perform the *Male* and *Female* Act of *Generation*.

But before I proceed to explain this new System, I think my self obliged to declare, that the first Hint of this Secret, was communicated to me several Years ago by a worthy Member of the *Royal Society*, *Robert Balle*, Esq; who had this Notion for above thirty Years, that *Plants* had a Mode of *Generating* somewhat analogous to that of *Animals*. The Light which I received from this Gentleman was afterwards farther explain'd by another Learned Member of that Society, Mr. *Samuel Moreland*, who in *Philos. Trans.* Numb. 287, Anno 1703, has given us to understand how the *Dust* of the *Apices* in *Flowers* (i. e. the *Male Sperm*) is convey'd into the *Uterus* or *Vasculum Seminale* of a *Plant*, by which Means the *Seeds* therein contain'd are impregnated. I then made it my Business to search after this Truth, and have had good Fortune enough to bring it to Demonstration by several Experiments; since which, a Gentleman of *Paris* has printed something of the same Nature, in the *Hist. de l' Acad. de Sciences*, for the Years 1711 and 1712, which were publish'd about two Years ago.

But to come to the Point, the *Lilly* being a Flower more generally known than any other, and its Generative Parts being large and exposed, I shall from thence endeavour to explain the Method which Nature makes use of to impregnate the *Seeds* of that and every other *Plant*, and by which Means the several *Species* of *Vegetables* have been continued to the World.

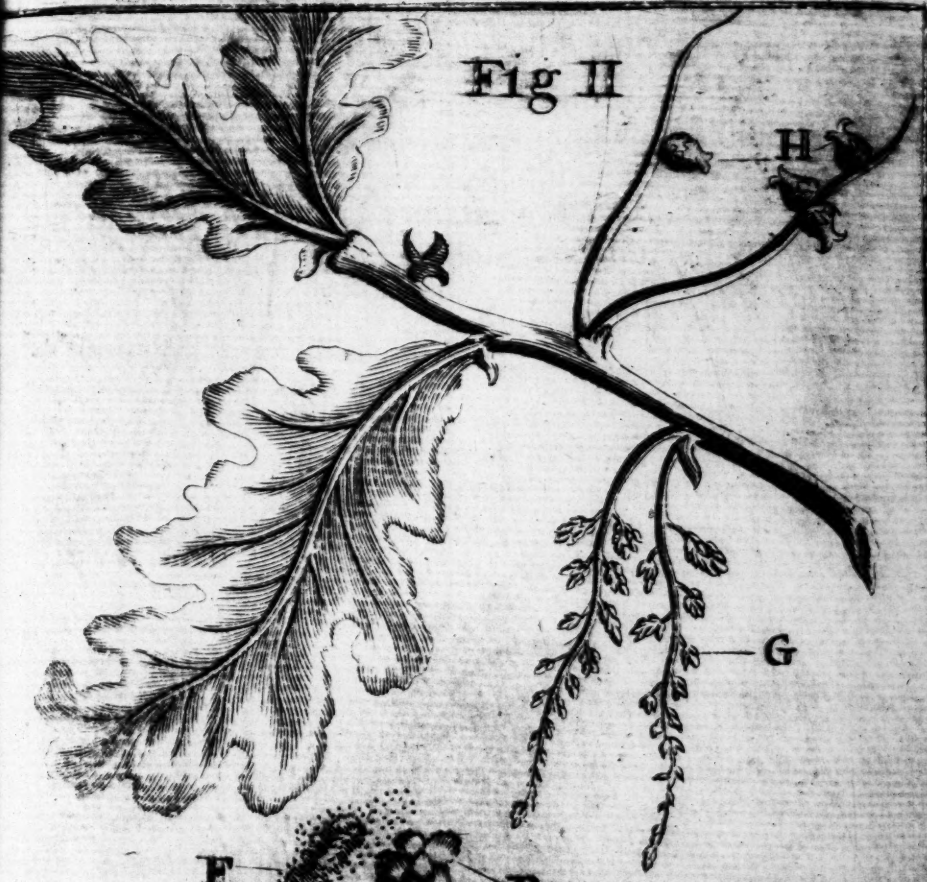
The *Flower* of the *Lilly* has six *Leaves* or *Petals*, which are set on upon the Summit of the *Footstalk*, mark'd *A* in the first Figure, they serve to guard the Parts of *Generation* from the Injuries of the Weather, and as they are of no other Use that I know of, so it is not necessary that I should place them in the Figure.

B is the Mouth of the *Pistillum*, or Passage which leads into the *Uterus* *C*, in which are three *Ovarys* fill'd with little *Eggs* or *Rudiments* of *Seeds*, such as we find in the *Ovaria* of *Animals*, but these *Eggs* will decay and
come

rm
I
of
go
lle,
hat
to
his
her
nd,
gi-
in
rus
the
e it
had
by
ris
tist.
iz,
ver
ra-
nce
kes
her
ge-
als,
ulk,
the
er,
t is
ich
ll'd
ind
and
me

pt. 1. p. 5

Fig II



H

G

F

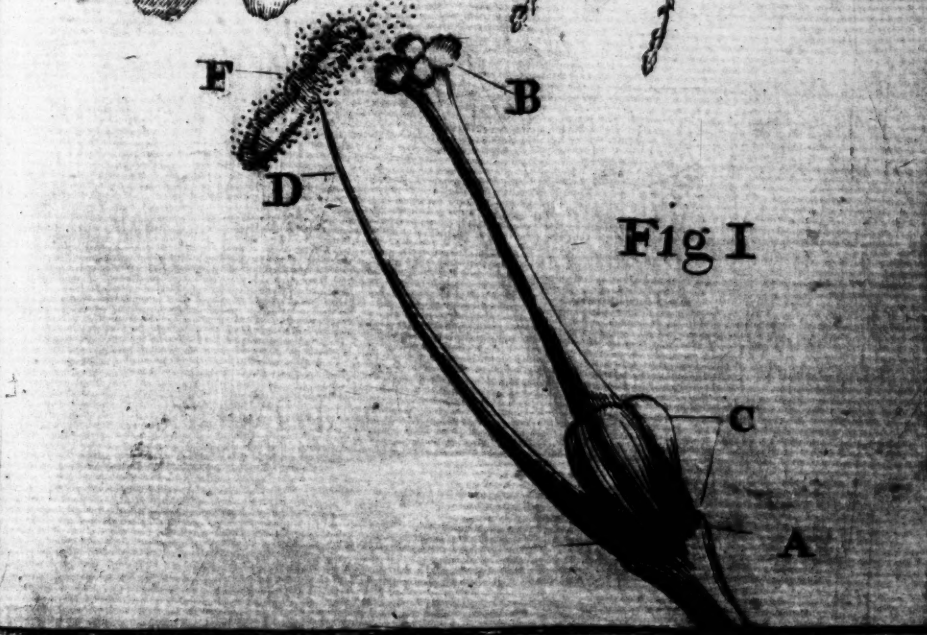
B

D

Fig I

C

A





com
Far
of t
F
the
the
bur
tick
eith
its r
For
of t
M
Ma
Bee
to r
Wa
But
qui
and
ed,
a F
for
I
Sta
pla
lam
Pij
it
(o
lum
it,
tha
ob
co
ha
lik
ran
Le
Ut

come to nothing, unless they are impregnated by the *Farina Fecundans* or *Male Seed* of the same *Plant*, or one of the same sort.

From *D* to *E* is a *Stamen* of the *Lilly*, through which the *Male Seed* of the *Plant* is convey'd to be perfected in the *Apex F*, where, by the *Sun's Heat*, it ripens and bursts forth in very minute *Particles* like *Dust*; some *Particles* of which *Powder* falling upon the *Orifice B*, is either convey'd from thence into the *Utricle C*, or by its magnetick *Virtue* draws the *Nourishment* with great *Force* from the other *Parts* of the *Plant* into the *Embryo's* of the *Fruit*, and makes them swell.

Now that the *Farina Fecundans*, or *Male Dust*, has a *Magnetick Virtue*, is evident, for it is that only which *Bees* gather and lodge in the *Cavities* of their hind *Legs* to make their *Wax* with; and it is well known, that *Wax*, when it is warm, will attract to it any light *Body*. But again, if the *Particles* of this *Powder* should be requir'd by *Nature* to pass into the *Ovarys* of the *Plants*, and even into the several *Eggs*, or *Seeds*, there contained, we may easily perceive, if we split the *Pistillum* of a *Flower*, that *Nature* has provided a sufficient *Passage* for it into the *Uterus*.

In the first *Figure* I have only given a *Design* of one *Stamen* with its *Apex*, to prevent *Mistakes* in my *Explanation*, but the *Flower* of every *Lilly* has six of the same *Figure* and *Use*, which are placed round about the *Pistillum*, or *Female Parts*; so that 'tis almost impossible it should escape from receiving some of the *Male Dust* (or *Farina Fecundans*) falling upon it.

In this and other *Flowers* of the like *Nature* the *Pistillum* is always so placed, that the *Apices* which surround it, are either equal in *Height* with it, or above it, so that their *Dust* falls naturally upon it. And when we observe it to be longer than the *Apices*, we may then conjecture that the *Fruit* has begun to form it self, and has no longer *Occasion* of the *Male Dust*. And it is likewise observable, that as soon as this *Work* of *Generation* is performed, the *Male Parts*, together with the *Leaves*, or *Covering*, fall off, and the *Pipe* leading to the *Uterus* begins to shrink.

We may further remark, That the top of the *Pistillum* in every *Flower*, is either cover'd with a sort of Velvet Tunic, or emits a gummy Liquor the better to catch the *Dust* of the *Apices*.

And now as we may find in the Description I have given of the *Lilly*, that the *Uterus* is within the *Flower*; on the other Hand the *Uterus* of a *Rose* is without the *Flower*, at the bottom of the *Petals* or *Flower-Leaves*. And likewise in *Fruit-Trees*, the *Cherrys*, *Plums*, and some others, have their *Utricles* within their *Flowers*, and the *Gooseberry*, *Currant*, *Apples* and *Pears*, on the outside of bottom of their *Flowers*. But farther, altho' Nature has design'd the *Dust* of the *Apices* to fecundate the *Female* Parts contain'd in the *Flowers* of *Plants*; yet we observe that in some *Plants* the *Male* and *Female* Parts are remote from each other; as for Example, the *Gourd*, *Pumpkin*, *Melon*, *Cucumber*, and all of that Race, have *Blossoms* distinctly *Male* and *Female* upon the same *Plant*. The *Male Blossoms* may be distinguished from the others, in that they have not any *Pistil* or *Rudiment* of *Fruit* about them, but have only a large *Thrum* cover'd with *Dust* in their middle; the *Female Blossom* of these has a *Pistillum* within the *Petals*, or *Flower-Leaves*, and the *Rudiments* of their *Fruit* always apparent at the bottom of the *Flower* before it opens; and so in like Manner all *Nut-bearing*, and, I think, *Mast-bearing Trees* have their *Catkins* or *Male Blossoms* remote from the *Female Parts*.

The *Oak* for Example, which blossoms in *May*, has its *Male Parts* distinct from the *Acorns*, we find Strings of little *farinaceous Flowers* in great abundance, as in the second Figure, mark'd G, remote from the *Rudiments* of the *Acorns* or *Fruit* mark'd H: And so likewise in the *Walnut*, *Chestnut*, *Hazel*, *Pine*, *Cypress*, and even the *Mulberry*, *Aspen*, and others. I have observ'd that some sorts of *Willows* change their Sex every Year, by producing only *Male Blossoms* or *Catkins* one Year, and the Year following *Strings* of *Female Blossoms*, which if they then happen to be near enough some *flow'ring Male*, will produce *Seeds* not much unlike those of an *Apocinum*.

When

When we view with a good *Microscope* the Male Dust of one single Plant, we find every Particle of it to be of the same Size and Figure, but in some Cases, it is of two Colours, as in the *Tulip*, where it is Yellow and Blue; but as Plants differ from one another in their Figures and Qualities, so are the Figures of their several Dusts greatly different from each other; a Grain of the Dust of *Geranium Sanguineum*, *Maximo flore* of C, B, P, is like a Bead of a Necklace with a Hole thro' it.

The *Farina* of the *Corona solis perennis flore & semine maximus*. Hort. Lugd. Bat. is a Globe set with Thorns; that of the *Ricinus Vulgaris*, C, B, P, is of the Figure of a Grain of Wheat.

And the *Acer Montanum Candidum* of C, B, P, affords a Dust of the Figure of a Cross; and in like manner does the *Farina* of every Plant differ in its Shape from the rest.

The Female Parts of Generation in Plants are best seen in large Fruits, without the trouble of the *Microscope*; such as the Fruit of the *Pumpkin* or *Melon*, where with the natural Eye we may discover the *Vessels* distinctly which make the *Tunick* or Covering of each Ovary; we may see how the Seeds are join'd to it, and by what End they receive their Nourishment. And again, between the several Ovarys enclos'd in that Fruit, we may very easily perceive the *Vagina*, or Passage through which the *Farina Fecundans* has pass'd to impregnate the Seeds.

It may perhaps be objected, that there are many Flowers which hang downwards, as the *Crown Imperial*, the *Cyclamen*, &c. and that their *Pistils* cannot receive the *Farina Fecundans* upon them; but if we observe that the *Pistils* of these Flowers are always more prominent, or somewhat longer than the dusty *Apices* which surround them, we may easily conceive that the glutinous Matter and Velvet Covering on the Extremities of the *Pistils*, may be capable enough of receiving and holding some of the Powder as it falls; and whether the Intromission of the *Farina Fecundans* be requisite or not, its Lodgment on the Mouth of the *Pistillum* may, by Virtue of its attractive Quality, perhaps fecundate the Seeds

contain'd in the *Uterus*; I am sure in the Production of *Animals* there are yet greater Difficulties to encounter with; and it may be, if the Analogy between *Plants* and *Animals* was more enquired after by the Learned, they might discover many new things which would be serviceable to the Preservation and Benefit of *Animal* Bodies, as this Knowledge will be to the Improvement of the *Vegetable World*. We find, for Example, that *Trees* are generally longer liv'd than *Animals*, some of them living to four or five Hundred Years; nay, we have some Accounts, by Tradition, of *Trees* that have liv'd above 2000 Years; the Reason I think is plain, for that, *First*, *Trees* have no Sensation (for it is my Opinion, that the Senses prey abundantly upon the Juices of the Body they belong to.) *Secondly*, They always breathe the same Air; And, *Thirdly*, they feed always upon the same simple Diet. And Mankind, who in the first Times is said to have lived upwards of 900 Years, is said to have fed upon a simple Diet, and to have drank of the clear Stream; at least he had then but little Variety of Food. But I hope my Reader will pardon this Digression of mine, it may perhaps put him upon greater Discoveries.

I shall now proceed to what I call the *Demonstrative Part* of this *System*. I made my first Experiment upon the *Tulip*, which I chose rather than any other Plant, because it seldom misses to produce Seed. Several Years ago I had the Conveniency of a large Garden, wherein there was a considerable Bed of *Tulips* in one Part, containing about 400 Roots; in another Part of it, very remote from the former, were twelve *Tulips* in perfect Health. At the first opening of the twelve, which I was very careful to observe, I cautiously took out of them all their *Apices*, before the *Farina Fecundans* was ripe, or any ways appear'd; these *Tulips* being thus castrated, bare no Seed that Summer, while on the other Hand, every one of the 400 Plants which I had let alone produced Seed.

But as a farther Demonstration that *Plants* generate after the manner I have endeavoured to account for it,

I shall recommend to my Reader the following Experiment. Make choice of such a *Plant* of the *Hazel* or *Philbud*, as you find to be in a bearing State, and far distant from any other of the same Sort; this *Tree* in *January* puts forth what are commonly call'd *Catkins*, which are long *Thrums*, compos'd of very small *Flowers*, that towards the beginning of *March* are cover'd with a fine *Dust*, or *Male Seed*; 'tis then the *Blossoms* or *Female Parts* appear on the *Buds* of the same *Tree*; they are very small, and hardly to be discern'd without strict Enquiry, only offering to the View a small Cluster of *Scarlet Threads*, which are so many *Tubes* leading to the Rudiments of the *Nuts*; this happens at a windy Season of the Year, that the *Male Dust* may be more easily convey'd to the *Utricles* or *Female Blossoms* of the *Plant*. Now as soon as the *Catkins* appear, they must be carefully taken from the *Tree*, and it will produce no *Fruit* that Year, unless you have a mind to single out any particular *Blossom* of it, which may be impregnated with *Catkins* from another *Tree*, gather'd fresh every Morning for three or four Days successively, and dusted lightly over it, without bruising its tender *Fibres*: And in like manner may the *Blossoms* of any other *Tree* or *Flower* be castrated, and will have the same Effect.

By this Knowledge we may alter the Property and Taste of any *Fruit*, by impregnating the one with the *Farina* of another of the same Class; as for Example, a *Codlin* with a *Pairmain*, which will occasion the *Codlin* so impregnated to last a longer Time than usual, and be of a sharper Taste; or if the *Winter Fruit* should be fecundated with the *Dust* of the *Summer Kinds*, they will decay before their usual Time; and it is from this accidental Coupling of the *Farina* of one with the other, that in an *Orchard* where there is Variety of *Apples*, even the *Fruits* gather'd from the same *Tree*, differ in their Flavour and Times of ripening, and moreover the *Seeds* of those *Apples* so generated, being changed by that Means from their Natural Qualities, will produce different kinds of *Fruits* if they are sown.

'Tis from this accidental Coupling that proceeds the Numberless Varieties of *Fruits* and *Flowers* which are rais'd every Day from *Seed*. The yellow and black *Auriculas*, which were the first we had in *England*, coupling with one another, produced *Seed* which gave us other Varieties, which again mixing their Qualities in like manner, has afforded us by little and little, the numberless Variations which we see at this Day in every curious *Flower-Garden*; for I have saved the *Seeds* of near a hundred plain *Auriculas*, whose *Flowers* were of one Colour, and stood remote from others, and that *Seed* I remember to have produced no Variety; but on the other hand, where I have saved the *Seed* of such plain *Auriculas*, as have stood together, and were differing in their Colours, that *Seed* has furnish'd me with great Varieties, different from the *Mother Plants*. I believe I need not explain how the *Male Dust* of *Plants* may be convey'd by the Air from one to another, by which this *Generation* and *Production* of new *Plants* is brought about; but I shall hint by the by, to such as plant *Orchards* for *Cyder*, that they ought to plant only one Sort of *Apples* in those *Orchards*; and that such Plantations be likewise remote from other Kinds of *Apples*, whose *Farina* would else certainly spoil the *Cyder Fruit*, by ripening some sooner and others later, which would occasion almost a continual Ferment in the *Liquor*, and never permit it to settle or grow fine.

Moreover, a Curious Person may, by this Knowledge, produce such rare Kinds of *Plants*, as have not yet been heard of, by making choice of two *Plants* for his Purpose, as are near alike in their Parts, but chiefly in their *Flowers* or *Seed-Vessels*; for Example, the *Carnation* and *Sweet-William* are in some respects alike, the *Farina* of the one will impregnate the other, and the *Seed* so enliven'd will produce a *Plant* differing from either, as may now be seen in the Garden of the ingenious Mr. Thomas Fairchild of *Hoxton*, a *Plant* neither *Sweet-William* nor *Carnation*, but resembling both equally, which was rais'd from the *Seed* of a *Carnation*, that had been impregnated by the *Farina* of the *Sweet William*. These

Coup-

Couplings are not unlike that of the *Mare* with the *Ass*, which produces the *Mule*, and in regard to *Generation*, are also the same with *Mules*, not being able to multiply their *Species*, no more than other Monsters generated in the same manner.

We may learn from hence, that the *Fruit* of any *Tree* may be adulterated as well by the *Farina* of one of the same Sort, which perhaps may be sickly and of a Dwarf Kind, as by the *Dust* of some other Kind near a-kin to it, and worse than it self. Now as such Couplings may be very frequent in common *Woods*, so would I recommend the Choice of *Seed*, to be made only from such *Plants*, or *Timber-Trees* as excel in Greatness or other good Qualities, and are far distant from others of meaner Sorts, which might degenerate their *Seeds*, and cross our Expectations when they come to grow up; and this is as necessary to be observed among *Vegetables*, to maintain their good Qualities in the young *Plants* they are to produce, as it is in the Breeding of *Game-Cocks*, *Spaniels*, or *Running-Horses*.

There is but one sort of *Plant* that I know of, which seems to be out of this Danger of coupling with other Sorts, and consequently of either improving or diminishing the Qualities of its *Seeds*, and that is the *Mistletoe*; the Parts of its Flowers are indeed as apt to Generation as those of other *Plants*, but I have never seen any Variety of this *Plant*, or do I know any other nearly enough related to it to engender with it; for whether we find it growing upon the *Oak*, *Willow*, *Lime*, or any other *Tree* whatever, the *Leaves*, *Flowers* and *Fruit*, with its manner of *Growth*, are all alike. And since I have had Occasion to mention it in this Place, give me leave to take Notice of some Particularities belonging to it, as that it is neither to be propagated in *Earth* or *Water*, but upon *Trees* and *Plants* only. The Ancients made it a *Superplant*, peculiar to the *Oak*, and tell us, that altho' it seemingly produced *Seed*, they did not believe that that *Seed* could possibly be made to vegetate, because I suppose they have try'd it in the

Earth without Success. But as it is so frequently found growing on other *Trees*, besides the *Oak* in our Times, I shall take occasion at once to overturn their Opinion in relation to this *Plant*, by shewing how it may be propagated from *Seed* upon any *Tree* whatever. About *Christmas*, when the *Berries* are ripe, they may easily be made to stick upon the smooth *Bark* of any *Tree* you have a mind to propagate them upon, whether it be the *Oak*, *Ash*, *Elm*, *Apple*, *Pear*, *Plum*, *Rose*, *Gooseberry*, or *Currant*, &c. The *Viscous Juice*, which encompasseth each *Seed*, will bind it fast to the Part you place it upon, and with this small Trouble you may expect young *Plants* the following Year, provided the Birds don't devour the *Seeds* you have sown, therefore a Net would do well to secure them. I have seen twenty *Plants* of *Mistletoe* growing upon as many different Sorts of *Trees* and *Shrubs* in one Garden, which were propagated in the same manner I have mentioned. And I believe it would be very useful in correcting the too great Vigour of some *Fruit-Trees*, and bring them to bear, by taking from the *superabundant Juices*, which are always destructive to *Prolificity*, either in *Plants* or *Animals*.

And now from the Account I have given of the Generation of *Plants*, it appears that double *Flowers* seldom bear *Seed*, because the *Dust* of the *Apices* is too much crowded with the *Petals*, or *Flower-Leaves*, which for that Reason cannot easily reach the *Style* or *Pistil* of the *Flower*, which is always prominent, and above the *Petals*, in full *Flowers*. It appears likewise, that the natural Properties of *Fruits* or *Seeds* may be changed by accidental coupling with other *Plants*; and that the *Seeds* so alter'd, may rob us of our Expectations in *Planting*, by having their Principles debauch'd by the *Dust* of distemper'd and degenerated *Plants*. I could still add many other Remarks relating to this Discovery, and give my Reader a more ample Description of the Generative Parts of *Vegetables*, as I have observ'd them with the best *Microscopes*; but I conceive I have said enough to explain what I proposed upon this Head, and shall

shall therefore now proceed to offer such Experiments as I have made relating to *Soils*, and endeavour to shew how they may be mended, alter'd, and improv'd, chiefly by proper Mixtures with each other.

CHAP. II.

Of *SOILS* proper for the Nourishment of *PLANTS*, and *Composts* for forwarding the Growth of *PLANTS*.



IF *Plants* in their several Degrees draw from the *Earth* such *Aliment* as is proper for their Subsistence, and that as the Nourishment they receive is more or less suitable to them, so they prosper accordingly; we may then reasonably infer that there is a Circulation of *Sap* in *Vegetables*, in some respect like that of the *Blood* in *Animals*, as I have already endeavour'd to shew in my first Chapter of this Tract. For in *Animals* it is very certain, that a *Diet* is required by them for their Subsistence, and that a *Diet* being concocted, is the Matter from whence the *Blood* is drawn; and that as the *Blood* is, so is the State of the Body, either healthful or distemper'd; then it reasonably follows, that we ought as carefully to provide wholesome and natural Nourishment for the Welfare of each respective *Plant* we design to propagate, as we usually do the proper *Food* or *Diet* of every *Animal* we have a mind to nourish. The *Food* of *Land Animals* is of three Kinds only, viz. *Flesh*, *Herbs*, and *Seeds* or *Fruit*. So likewise the *Food* of *Terrene Plants* is of three sorts, *Sand*, *Loam*, or *Mother-Earth*, and *Clay*, in their several Degrees; and as the several Kinds of *Flesh*, the various Tribes of *Herbs*, and the many different *Fruits* have each their respective *Animals* to feed upon them, so *Sand* in its several Degrees, *Loam* of different Sorts, and *Clays* of all Kinds, have certain Proportions of *Salts* in each of them proper for the Nourishment of every *Plant*.

Fruit or *Seeds* I esteem to be the *medium Nourishment* between *Flesh* and *Herbs*, and we find that every *Land Animal*

Animal will feed upon it, altho' their natural Food is either Flesh or Grass; as for Example, a Horse, whose proper Food is Grass, will eat Grain, and so Dogs and other Creatures who feed upon Flesh, will eat Fruit. And I am of Opinion, that the *Salts* therefore in Flesh, Fruit and Herbs, are the same, only differing in the Proportions of their Quantities; that is, one Pound weight of Flesh may perhaps contain twice as many *Salts* as the like Weight of Grain or Seed, and one Pound of Grain twice the Quantity of *Salts* that may be found in a Pound of *Herbs* or *Grass*. Now that all these *Salts* are proper for *Vegetation*, is evident by the common Practice of burying *Straw*, or *Litter*, *Brakes*, *Hulm*, and such like, to enrich some Soils: Again, if Fruits and Grain be well consumed, one Load of it laid upon a Spot of Ground, will enrich it more than ten Load of Horse-Litter, or Common Dung, says Sir *Hugh Platt* from Experience, and we are very sensible of the prodigious Effect of *Carriion*, *Leather*, or any Parts of *Animals* apply'd to the Roots of *Vegetables*.

So on the other Hand, in natural Soils, what I call *Loam*, or *Mether Earth*, I suppose to be the *Medium* between Sand and Clay, that is, an Earth of a certain Temperature, partaking equally of them both. And indeed all Soils that I know of, may be reduced under these three general Heads, viz. *Sand*, *Loam*, and *Clay*; for all others, altho' they may bear different Names, are in some Respect depending upon one or other of these. *Gravels*, and all the open Soils, 'till we come to the *Loam* I mention, are of the *sandy Race*; and the binding Earths, from *Loam* downwards, 'till we come to the Stiffness of Chalk it self, may be ranged with the *Clay* Kind. I find all these Soils are alike tending to *Vegetation*, and have their *Salts* proper for it, but in different Proportions of Quantity; that is, a Peck of *Clay* has perhaps twice as much *Salts* in it as the same Quantity of *Loam*, and that Quantity of *Loam* twice as many *Salts* as the same Proportion of *Sand*. Now from this Argument of mine, it may seem at first View, that *Clay* is the most proper Soil to forward the Growth of Plants; whereas

whereas we know that *Sand* is much more apt to produce *Plants* quicker than any other *Soil*; but give me leave to explain this Paradox: *Clay*, whose Parts are closely wrought together, will not easily give out those *Salts* contained in it, neither can the tender *Fibres* of every Plant make their Way thro' it, in search of their Nourishment; but if we open its Parts, by digging and breaking it into small Particles, and keep those Parts open by a Mixture of some sharp *Sand*, or other Body of the like Nature, we shall not fail to see the Effects of its Vigour.

On the other Hand, *Sand* is apt to push forward the *Plants* growing upon it early in the Spring, and even will cause them to *Germinate* near a Month sooner than the *Plants* growing upon a *Clay*; the Reason is, that the *Salts* in the *Sand* are at full Liberty to be rais'd and put in Motion upon the least Approach of the Sun's Warmth: But then as they are hasty in their Work, so are they soon exhaled and lost.

The *Clay* has certain *Plants* growing upon it, which are natural to it, and consequently thrive better in it than in any other *Soil*.

And the *Sand* likewise has its natural *Plants*, which delight in it, and will not equally prosper in any other Earth.

However, both the *Clay-plants*, and those of the *Sand*, will grow in the Loamy *Soil* I have mention'd, because it partakes of the Qualities of *Sand* and *Clay*, as Grain doth of *Flesh* and *Herbs*, in Respect to the Food of *Animals*.

I might here take Notice that the Word *Loam* is variously receiv'd and understood by *Planters*: Some mean by it the most common superficial *Earth* met with in *England*, without any Regard to the Proportions it bears of *Sand* and *Clay*. Others would have it more inclining to *Clay* than *Sand*: However, I shall endeavour to avoid all Disputes that might arise concerning it, by once more repeating, that when I shall have Occasion to mention it, I mean only that Degree of Earth which equally partakes of *Sand* and *Clay*.

This Earth then, which I call *Loam*, may either be of a black, or yellow Colour; but let it be either the

one

one or the other, Experience shews us that Plants of all Sorts will grow in it, and for the Reasons I have before mention'd, it appears to be a more beneficial Soil to Plants than any other, wherever it happens to be found.

Now, as I take it, seeing that *Loam* is so happy in its Productions, that even Plants naturally bred in different Soils will thrive in it, it then seems reasonable, that if by Mixtures of *natural Earths* one with the other, we make such a Compost as may nearly imitate it, we may expect far greater Success from a Mixture of that Sort (especially in Plantations of durable Trees) than from any Composition we can devise to be made with *Dungs*, or other forcing Ingredients. For it is very well worth our Remark, that *Animals*, and *Vegetables* also of all Sorts, are more lasting, as they are fed by simple and natural *Diets*, as I have hinted before. It is true, *Hot-beds*, or any other Means of the like Nature, would indeed forward the Growth of Trees perhaps as much in one Year, as Nature of her self would do in six: Or as Dr. *Agricola* of *Ratisbone* pretends by his artificial Compost to raise *Forest-Trees* to exceed the Height of twenty Foot in a few Days time; but we may be assured they can never last out half their Days, for we find the same in *Animals*, but particularly in *Mankind*, who by Excess of unnatural Foods, and invigorating Liquors, shortens his Life; while on the other Hand, such Men as have bare Subsistence, and are forced thro' Necessity to live upon the natural Food of their own Country, are long-liv'd; I therefore would advise, as well from what I have said, as from the Observations and Enquiries I have made of the Growth of *Timber-Trees*, that they may not be forced by any violent Means, if we design them to last long, and improve themselves to be valuable; neither to take them from a Nursery of rich Ground, and expose them afterwards in such Land where they may want the same plenty of Nourishment they have been used to; for then they would certainly decline and deceive us. Let the Earth we design to plant them in be fresh and well open'd in its Parts; and

if

if it should be sifted, it will help the striking of young Roots at first planting, and support them 'till they can gather Strength.

I think I need not further explain, that equal Quantities of *Sand* and *Clay* well mix'd together, will afford us the desirable Soil we seek after, in Case the *Loam* or *Mother Earth* I mention, cannot conveniently be met with. But this has its greatest Use, when we make new Plantations, for we ought also to examine the Depth of the Soil underneath, into which our Trees are afterwards to push their Roots, and from whence they are to draw their chief Nourishment, and that may be best known from Observation; that is, by examining the most vigorous Trees of every Kind, and observing the *Qualities* and *Depths* of the Soils they feed from, and from such Examples, to make our Plantations accordingly; we shall then find that an *Oak* will never make good Timber, if it be planted or sown upon a shallow rocky Soil, and at the same time that an *Ash* will grow there; but this I shall more fully explain in the next Chapter of *Forest Trees*.

And now seeing that some delight more in the quick Growth of the Trees they plant, than the Advantages which would accrue to their Families, from a regular and natural Growth of their Plantations, I shall mention some Mixtures which have been experienced to forward the Growth of Trees.

Mixture the First. If the Soil be stiff, inclining to Clay, let it be well broke and open'd, of which take about five Load, add to it an equal Quantity of *Heath Turfs* burnt, let these Ingredients be well mixed and sifted, or skreen'd together, after they have lain for a Winter in a Heap or Ridge. This Compost will forward Trees extreamly.

Second Mixture. To four Load of stiff Soil broke and open'd as before, add as many Load of sharp Sand, to which put two Load of the Ashes of burnt Furzes, Gorse, Fern, Weeds, or Wood; let this be well mix'd together about *September* or *October*, and be laid up in a Ridge 'till the *February* following, to be skreen'd or sifted

sifted for Use. Sir *William Bruce*, a Gentleman of *Scotland*, made use of the like *Mixtures* in his Garden, with the Success he desired.

Third Mixture. One Load of *rotted Wood*, such as may be found under a *Wood Pile*, or, for want of that, the same Quantity of *rotted Leaves*. To either of these add a Load of *burnt Grass Turf*, two Load of *Sand*, and the like of *stiff Soil*, this Composition must be well mix'd and laid in a *Ridge* from *October* 'till *February*, and be sifted for Use. N. B. These artificial *Soils* should always be compos'd about *October*, and sifted the following Spring, just before you use them; for if you should prepare them in the Spring, the Summer's Heat would exhale their *Volatile Spirits*, and besides, *Weeds* would be apt to rob them of their Nourishment, unless they were to be made in some shady Place under *Trees*.

Fourth Mixture. Take the Quantity of a Load of *Rape Seeds*, after the Oil is press'd from them, which may be very easily had at the *Rape Mills* at a small Expence; add to them two Load of *Sand*, one of *stiff Soil*, and one of *burnt Heath*, or *Grass Turf*, prepared as the others, and sifted, will greatly forward the Growth of any Plant.

Fifth Mixture. Take one Load of *Malt Grains* (after *Brewing*) add to it two Load of *Sand*, and two of *stiff Soil*, mix'd and prepared as before, it will make an incomparable Compost to hasten the Growth of Plants.

Sixth Mixture. *Sheeps-Dung*, with a like quantity of *Wood-Ashes*, and twice as much *Loam*, or *Mother Earth*, prepared as before, will greatly forward the Growth of *Herbs* and *Trees*.

Seventh Mixture. Take of *Horse-Dung* well consumed, two Load; add to it one Load of *Turf Ashes*, two Load of *Sand*, and two of *stiff Earth*, prepare this Mixture as before, and it will greatly forward Germination of Plants: But if *Sea-Coal Ashes* are more easily found, put them in the Place of the *burnt Turf*, and then add one Load more of *stiff Earth* to the Compost.

And now besides the several Compositions which I have set down, I might add those which I have known

to

to have been prepared with the *Soil* of *Poultry*, that feed upon Corn or Grain. I found those Ingredients very hot and full of Salts, greatly tending to *Vegetation*, and abundantly quicker in their Operation, than the *Soil* of *Animals*, which only feed upon *Herbs*; but that is no great Wonder, if it be true what Sir *Hugh Platt* says, that one Load of Grain will enrich Ground more than ten Load of common *Dung*, and also from what I know from Experience, and have mention'd in the *Fourth* and *Fifth Mixtures* prescrib'd in this Chapter. Now if simple *Grain* by Infusion only (if I may so term it) in the *Mixtures* or *Composts* I have directed, has a good Effect, we may easily imagine how much more powerful it will be when it has pass'd through the Bodies of *Animals*. I could say much more upon this Head, but as it is my Design to be as short as may be convenient, and purposing chiefly in this Treatise to contribute such Experiments as may tend to the Improvement of *Plantations* of *Forest-Trees*, I shall not here enlarge upon *Soils*, but leave some Particulars for another Work, and sum up this Chapter, with two or three short Remarks, first that a *Preparation* of natural *Soils* answerable to the *Loam* or *Mother Earth* I have mention'd, is certainly the best for all Sorts of *Forest-Trees* to be planted or sown in, if we design them to make good Timber; and if it is rather desired that such *Trees* should grow quick, and consequently the subject to decay early, or be prejudiced by *Blight*s, I have made mention of such forcing *Composts* as will set them forward in their *Growth*; but in my Opinion might be better employ'd in Gardens for the Production of short-liv'd *Plants*.

CHAP. IV.

Of TIMBER-TREES and UNDERWOOD, and of
Dressing and Cleaning of Woods.

AS there is nothing which contributes more to the *Honour, Beauty, and Welfare* of an Estate, than timely and sufficient *Plantations* of *Timber-Trees*, so I have chose to make the *propagating* of *Timber* my present Subject, and what I have said in the former Chapters may, I hope, contribute something towards our Success in the Undertaking, which will greatly contribute to the Welfare of every Man of Estate, if it be rightly understood: For altho' a Gentleman may perhaps be possess'd of a plentiful Fortune, suppose of 10000 *l. per Annum*, he ought certainly to consider, that in process of Time he must provide Fortunes for Children out of that Estate, proportionably to his Honour, and again, his Children must likewise make farther Provisions out of their several Parcels for their Issue, and so on, 'till at length, in six or seven Generations, we shall find the paternal Estate cut to Pieces into so many little Shares, that there will hardly remain any Idea of the plentiful Stock of their Ancestors. Now I say, it would certainly be a Token of great Wisdom, for every Gentleman of Fortune, not only to consult all proper Means how to maintain the Bulk of his Estate entire, but continue it so in his Line, wisely guarded against the Hazards of Fortune, and even the natural Consequences I mention, by timely and necessary *Plantations* upon it, which would be so many Monuments of his Wisdom, and improving Treasuries for the good of his Posterity: And besides, how beneficial would such *Plantations* be in Case of extraordinary Accidents; the Profuseness of a young Heir; the Discovery of Iron or Lead Mines, where Wood is of such extraordinary Use; or for the raising a Sum of Money upon any Emergency? I may add likewise, besides the private Interest of the Proprietor, it would be of general Use, and for the Nati-

on's

on's Good. How happily is *England* situated for Trade, what Benefits doth she receive from her Shipping, and therefore how profitable and useful is her *Timber*, which will yet become more valuable than ever, in that so much is continually cut down, and very little Care taken to make new Plantations for future Benefit? In a Word, the present State of *Timber* in *England* is so very inconsiderable in respect to the great Use made of it, and even that which remains growing is generally so much neglected in its Culture, that I hope some Direction for its Improvement may not be unacceptable to the World.

The *Trees* which have been commonly propagated in *England*, for *Timber*, are the *Oak*, *Ash*, *Beech*, *Elm*, *Chestnut* and *Walnut*; these are of the upper Class, and we may add to them the *Ilex* or *Evergreen Oak*.

Of the lower Rank for *Underwood*, or more indifferent Use, are the *Hazels*, *Alders*, *Willows*, and some others of less Note.

The *Oak*, like all other *Plants*, has its Varieties, which are taken Notice of by the *Botanists*. I have observ'd about five Sorts in *England*; but I shall only recommend two Kinds of them to be planted for *Timber*. The first and best, in my Opinion, is the upright *Oak*, which grows more erect than any other; and the second is the large spreading *Oak*. We have many Instances of these Kinds, that have attain'd to such prodigious Greatness of Stature, that the Timber alone of one Tree has been sold for upward of 50*l*. The *Oak* doth not only afford us the most serviceable *Timber* for Naval Architecture, but also for other Building. Its *Bark* is useful to *Tanners*, and the *Oak* is therefore cut down about *April*, when its *Bark* will peel. The *Acorns* are excellent Food for Hogs. This *Tree* delights in moist Ground of a good Depth, and will prosper in the coldest *Clay*; and, as Mr. *Evelyn* says, in *Gravel* also. It is noted likewise, that some *Oaks* having been sown in Hedge-Rows, have in the Space of thirty Years born a *Stem* or *Trunk* of a Foot Diameter. I have my self seen some seedling *Oaks* of twenty Years

Growth of near that Substance, which had never been removed from the Place where they were sown ; and I would advise, that every Plantation of *Oaks* be set from *Acorns* on the very Spot where they are to remain, and that we are likewise careful to chuse our *Acorns* from thriving vigorous Trees, for the Reasons I have before mention'd ; the Distance between them ought to be about 33 Foot, and the said Space between the *Oaks* should be interfown or planted for *Underwood*, as I shall direct in the following Chapter.

Of the *Asb* there are two Sorts, (falsely distinguish'd by the Names of *Male* and *Female*) which most deserve our Care, in that they are quick Growers, and rise to a prodigious Stature ; besides these there are several other Kinds which are not worth our Notice. So that we ought to be careful in the Choice of the *Keys* or *Seeds* we design to sow. I have heard of *Asb*-Trees of 40 Years Growth from the *Seed*, that have been sold for Twenty five Pounds a Piece, which have grown on Plains in light *Earth*, not very deep : And Mr. *Evelyn* tells us, that one Person planted so much of this sort of *Timber* in his Lifetime as was valued worth Fifty thousand Pounds to be bought, which he justly remarks was very good Encouragement for a small and pleasant Industry. The *Keys* of this *Tree* are sowed about *October*, or else may be laid at that time in *Sand*, S. S. S. 'till the following Spring, and then sown. The *Timber* of the *Asb* is used for Ploughs and Axle Trees, Wheel Rings, Oars, and many other Mechanick Works ; and if we propagate the *Asb* for *Underwood* only, it will turn to good Account for Hoops and Hop Poles. It may be cut about *February*.

The *Beech* delights in Mountains. In *Berkshire*, on the Chalky Hills, this Tree is very prosperous, and attains a considerable Stature ; its *Timber* is used about Keils of Ships, and many Implements of Husbandry ; it is the most common Fire-wood of *England*, especially about *London*, where Billets are usually burnt. Among the Coal Pits near *Newcastle upon Tyne*, this Wood is much used to make Cart Ways, where for many Miles

the

the Wheels of the Coal Waggon run upon it, which saves the Expence of Horse Flesh. This Wood will remain sound for many Years in those marshy Lands, and is much esteem'd for that Use. From the Seed, which is call'd *Beech Mast*, the *French* have long since drawn a very sweet Oil for eating, and lately the same has been practis'd in *England*. This Seed is likewise good to feed *Deer*, *Hogs*, and *Fowl*; it may be sown about *October*, or put in Sand like the *Ash-Keys*, 'till the Spring, the better to preserve it from *Vermin*. The Timber may be cut as the former.

We have many sorts of *Elm* frequent in *England*, among which the *Vulgar* or *Mountain Elm*, is counted the best for Timber; I shall therefore recommend this Sort to the Planter, before all others. It may be propagated from the Seed, or *Samera*, which ripens and falls from it towards the latter End of *April*, or beginning of *May*, it must then be sown in fine sifted *Earth*, or what I call *Loam* in the foregoing Chapter. This Seminary must be made in a shady Place, and water'd from time to time, as the *Earth* begins to dry; but besides this way of raising *Elms*, we may either propagate them from *Layers*, or *Suckers*; which last must be transplanted into Beds of fine *Earth* about the beginning of *March*, and kept well water'd. And so naturally is the *Elm* inclined to Vegetation, that I have heard some affirm, by sowing only the *Chips* of it in a Piece of plow'd Ground, they have rais'd a large Quantity of these Trees, which perhaps is not impossible; for I am assured in other Cases the Buds and Leaves, nay the very fibrous Roots of Plants, have been made to vegetate and produce Trees; as for Example, the single Leaves of *Oranges* have been made to strike Root, and produce Branches, Leaves, Flowers, and Fruits, by setting them half way in the *Earth*; and Mr. *Fairchild* of *Hoxton* has done the like with Leaves of the *Laurustinus*; however, let us raise our *Elms* which way we will, I shall advise that they be not planted out of their first Beds 'till they have stood there two Years; and then remove them to greater Distances from each other, and let them so re-

main 'till you plant them out for good, at about twenty Foot distance, in Beds of the sifted Loam directed; they grow quick, give a fine Shade, and afford valuable Timber; and if the *Witch Elm*, or *Dutch Elm*, be grafted upon this Kind, we may expect them to make Shoots of above eight Foot long in one Year, and produce Leaves of an extraordinary Bigness, but the Wood will then be not so valuable. This Tree delights in an Earth competently fertile, neither too dry or sandy, or too cold and spungy; nor does it require a deep Soil. Let it be moderately refreshed with Water after planting; and to keep the Earth about the Roots more open, and ready to receive Wet, cover the Bed it is planted in with rotted Fern, or other such like Matter. A Year or two after Planting you may refresh the young Fibres at the Extremities of the Roots, with some fine sifted Earth, or any one of the four first Mixtures mentioned in the foregoing Chapter, which will make the Tree shoot prodigiously, for that they contain vegetative Salts in great Abundance. The Timber of this Tree is very serviceable, especially where it may always lye wet, it will last a long time; it is mightily used for Pipes, Pumps, Mills, and such Parts of Ships as lye constantly under Water; in a Word, it is almost of general Use. The Time of Felling it is from *November* to *February*.

We have two Kinds of *Chestnut* in *England*, that which bears *edible Fruit*, and the other which is call'd the *Horse-Chestnut*: The first of these Trees affords good Timber, and the latter is only desirable for its pleasant Shade and beautiful Flowers: These Trees may both be raised by setting the *Nuts* about three Inches deep, in a light sandy Soil, towards the latter End of *February*, or beginning of *March*; but as the first only is useful, so I shall chuse to recommend it to the *Forester*. It delights in high Grounds remote from Water, which would spoil both its *Timber* and *Fruit*, and should indeed be set from the *Nut*, where it is always to remain, for 'tis apt to suffer greatly by removing, and spread too much in its Branches, when it loses its Tap-root, as all other

Tap-

Tap-rooted Trees are known to do. Its Timber is lasting if it be kept dry, and good for Building; and if it be planted for Underwood, it will afford excellent Poles and Stakes in nine Years after sowing, worth at least 10 s. per Hundred: The Fruit is sometimes used at our Tables, but more commonly given to *Deer* and other Cattle to fatten them. We may fell this Tree any time between *November* and *February*.

Among the *Botanists* there are reckon'd many sorts of *Walnuts*, two only of which I shall recommend to the Planter, viz. That with the soft Shell for the sake of the Fruit, and that with the black Grain for the Goodness of its Timber; they are both rais'd from the *Nuts* like the *Chestnut*, and should like them be sown in the Places where they are to remain. They are in great Danger of Death, if they lose their *Tap-root*, but will thrive extreamly if they have Depth of Earth to strike into. The *Walnut* grows well in Loam, but will flourish also in Chalk or gravelly Soil, either on hilly Ground or in a Vale, which (I think) shews it to be a foreign Plant; for as I have observ'd, every Plant natural to *England*, has a Soil and Exposure peculiar to it self, and will scarce be made to grow in any other sort of Land or Situation. I have seen some *Walnut* Trees of forty Years Growth from the setting of the *Nuts*, that were valued at five Pounds a Piece, and others standing by them, which were Trees planted at the same time (as the Owner himself inform'd me) that were not worth thirty Shillings a Tree; and the like Observation has been made of other *Tap-rooted* Trees, but particularly the *Oak*; so great is the Difference of Growth in downright rooted Plants, when they are set from *Acorns* or *Nuts*, and transplanted from the Nursery. The Timber is much used for Chairs, Cabinets, and Household Furniture; it is durable, and an Enemy to Worms, from its exceeding Bitterness. The *Nuts* yield abundance of Oil, and take Place among the best Fruits for the Table. This Tree may be cut down when the Sap is fix'd, i. e. from *November* to *February*.

The *Ilex*, or *Evergreen Oak*, is a Plant which produces admirable Timber, but is more particularly valuable for its *Knee Timber*, which is much tougher than that of our *English Oak*; it is in such Request among our Ship Carpenters, that many Ships lading of it has been brought to *England*. The Tree is of a quick Growth, and will attain to a very considerable Height, even to equal the tallest of the *English Oaks*, to which Perfections we may also add the Beauty of its Leaves, which are green all Winter.

That curious Gentleman *Robert Balle, Esq; F. R. S.* has, among other Improvements for the Good of his Country, propagated a large Parcel of these Trees at *Mamhead* in *Devonshire*, some of which have in about 30 Years space, grown to a considerable Greatness of Stature. And it is to be wish'd that others would follow his Example in the Culture of this beautiful and profitable Tree. This Gentleman has rais'd some thousands of them from *Acorns*, and transplanted them with Success and great Judgment; and to follow his Method, we must set the *Acorns* in Loam well sifted, in Garden Pots about *February*, and turn them out with the Earth about their Roots, when they are two Years Growth, to transplant them afterwards at proper Distances, where they are to remain. These, like our *English Oaks*, are *Tap-rooted*, and therefore delight in deep Soil, they prosper in moist Land, rather on a plain than on hilly Ground. If we consult the *Anatomy of Plants*, we ought to be very careful not to injure their *Tap-roots*, which are always answerable to the *leading Shoot* on the Top of the Tree; it is therefore reasonable to believe, that a Plant by losing of that *down-right Root*, is in Danger of losing also the *Top-Shoot*, which is fed from it. And altho' a Tree may strike fresh Roots after the *Amputation* of this *leading Root*, yet we may find by Experience, that the Sap will then push forth Branches in the Sides of the Stem, and discontinue its upright Growth. We may fell this Tree as we do the other *Oak*, for the Sake of its Bark, the *Acorns* are good Food

Food for *Deer*, and *Fowl*, which greatly delight in the Shelter of these Trees.

Having mention'd the most valuable Trees for Timber, I am in the next Place to take Notice of such others as will afford us the most valuable Crops of *Underwood*. I have already observ'd that the *Ash* and *Chestnut* may be order'd in this Manner, and bring considerable Returns to the Proprietor. The next which I shall propose for this Use, is the *Hazel*, which if it be rightly managed will turn to good Account in *Coppices*. This Plant may be raised from the *Nuts* sown a little after they are ripe, in cold, dry, sandy Ground; but if the Land happens to be more inclin'd to Clay, plow it in *Autumn*, and let it mellow with the Frosts 'till *February* before you sow them. The Learned advise, that after the *seedling Plants* are come up, they should be weeded or hough'd, so as to leave the Plants at three Foot distance from each other, and after three Years Growth, to cut them off within half a Foot of the Ground, by which Means they will be made to shoot forth many *Twigs* from each *Stem*, which in nine Years time, (*i.e.*) twelve from putting in Seed, will be fit to cut for Hop-Poles, Hoops, Faggots, and other such Uses; but if you rather chuse to use them for Hurdles, then they may be cut at five Years Growth. After the first cutting, you may cut again in seven or eight Years, if they like the Ground, for Poles and Hoops, as before; and so continue to do from time to time, as you see Occasion. But these Trees may be likewise propagated by *Suckers*, which are frequently found growing about the Roots of old Trees, but are not very certain in their Growth, after transplanting, unless they are carefully water'd 'till they have struck good Roots. In a Plantation of this Kind, which may be made at any time between *October* and the Beginning of *March*, when the Weather is open, these *Suckers* must be set at three Foot distance, and cut down within half a Foot of the Ground about the Beginning of *April* following; or they may also be propagated by laying down their *Branches* or *Twigs* about three Inches in the Earth, which will furnish us

with abundance of young *Plants* in a Year's time. This *Work* must be done about *October*.

The next I shall treat of is the *Willow*, an *Amphibious Plant*. There are many Sorts of it distinguish'd by the *Botanists*, which should I mention here by their several Names, I might perhaps perplex my Reader, and shall therefore only mention them as two Kinds, first the *Oziers*, which afford *Twigs* for the Basket-makers, and binding *Rods*, and secondly the *Tree kind*, or *Withy*.

First then the *Oziers*, which afford us *Twigs* for *Wicker-works*, are raised by setting *Slips* of two or three Years *Growth* about a Foot deep in marshy or wet *Ground*, at two Foot distance from each other; this *Work* is best done about the middle of *February*, if the *Weather* be open; the second Year after *Planting* they may have their *Tops* cut off, leaving their *Stems* about a Foot above *Ground*, so will they put forth *Twigs* which must be again cut down early the *Spring* following, which *Work* being continued every *Year*, the Owner will find considerable Advantage from such *Plantations*. An Acre of *Ground* thus managed will turn to better *Account* than the like Parcel of *Land* sown with *Wheat* or any Grain whatever, and it may be for this Reason that some would pretend to raise vast Sums of Money by planting several thousand *Acres* in this way, as I have been informed several Gentlemen propose to do. It is certain at present *Oziers* turn to good *Account*, but I am of Opinion that if we had only as many more planted as we have now growing in *England*, the Markets would be over-stock'd with them, and their Price would fall. And besides, every *Ground*, as I have said before, will not produce them. In this Treatise may be found the several sorts of *Trees* for Use, the different *Lands* they require for their Welfare, and the vast Returns they would bring in, if large *Plantations* were made of the several kinds, by a discreet Planter, who knew how to allot to every *Soil* the *Tree* proper for it. But I shall proceed now to give some Directions for the propagating of the large *Withy* or *Tree kind*, which will

also

also in a few Years time, afford profitable, though not very durable *Wood*. Its Use is for Perches, Raketals, and such like. *Branches* of three or four Years Growth about twelve Foot in length, being set near two Foot deep in the Ground in *February*, about fifteen Foot asunder, will soon make handsome *Trees*, which will bear *Lopping* every fifth Year; these love wet Ground, and will not be made to prosper in any other. I might add, that this, and several other sorts of *Willow* might be rais'd from *Seeds* which grow on the *Female Juli*, if we sow them in wet boggy Ground, as is practis'd in *France* and other Countries.

The *Alder*, more than all other *Trees* besides, delights in *Boggy Places*, and may be cultivated in the coldest wet Grounds. This *Amphibious Plant* is best rais'd from *Truncheons* or *Branches* about three Foot in length, setting them about *February* a Foot deep in the Ground: they thrive exceedingly on the Banks of Rivers, and will make such *Shoots* in three or four Years time, as may be then cut and sold to good Advantage for *Poles* and other Uses; it is a lasting *Wood* if it lie continually under Water, and if we believe *Jos. Baubimus*, will, in course of time, turn to *Stone*, but if it be exposed so as to be sometimes wet and sometimes dry, it is of no Duration. This *Plant* is also rais'd from *Seeds* in *Flanders*, where they make great Profit of it.

Thus have I given a short View of the several sorts of *Trees* which I would recommend to be planted for *Timber* and *Underwood*; I have endeavour'd to ascertain the several *Soils* and *Situations* proper to each of them, which I hope may be of some use, for that in the Quantity of an Acre of Ground we frequently find *Earths* of very different *Qualities*, to any of which, one or other of the *Trees* I have named may be allotted. And now as I suppose, that every Gentleman who is about to make a *Plantation*, will certainly make it upon his own *Land*, or at least on such a Parcel of Ground as will by right be continued after his Demise in his Family, it is reasonable enough to believe, that such Persons may have upon their Estates some *Timber* already growing,
some

some *Trees* prospering, others decaying: Now I say it would surely be good Husbandry to fell such *Trees* as began to decline, either from too great Age, or too near Neighbourhood with others.

To the first, I can pretend to give no other Direction than to have them cut down at the proper *Seasons*; but to the second, (*i. e.*) where they grow too close together, leave the most thriving *Trees* to grow and improve themselves, and cut up the others *Root* and *Branch*, leaving convenient distances between the *Trees* which remain standing, which ought to be only such as have their *Tops* or leading *Shoots* prosperous and in good order. Our Countryman *Lawson*, who had for above 40 Years study'd the Improvement and Management of *Woods* and *Timber-Trees*, has given us a very good Lesson concerning the *dressing* and *cleaning* of *Woods*, which being short, and much to the purpose, I shall insert in his own Words.

“ How many *Forrests* and *Woods*, wherein you shall
 “ have for one *thriving Tree*, four (nay sometimes twenty four) *evil thriving*, rotten and dying *Trees*, even
 “ while they live; and instead of *Trees*, thousands of
 “ *Busbes* and *Sbrubs*! What *Rottenness*, what *Hollowness*,
 “ what *dead Arms*, *wither'd Tops*, *curtail'd Trunks*, what
 “ loads of *Moss*, *drooping Boughs*, and *dying Branches*
 “ shall you see every where, and those that are in this
 “ sort, are in a manner all unprofitable *Boughs*, *canker'd Arms*,
 “ crooked little and short *Boals*! What
 “ an infinite Number of *Busbes*, *Sbrubs*, and *Skrags* of
 “ *Hafels*, *Thorns*, and other unprofitable *Wood*, which
 “ might be brought by *dressing* to become great and
 “ goodly *Trees*! Consider now the Cause.

“ The *lesser Wood* hath been spoiled with careless,
 “ unskilful, and untimely *Stowing*, and much also of
 “ the *great Wood*. The *greater Trees* at their first rising
 “ have fill'd and overladen themselves with a Number
 “ of *wastful Boughs* and *Suckers*, which have not only
 “ drawn the *Sap* from the *Boal*, but also have made it
 “ knotty, and themselves and the *Boal* mossy for want
 “ of *Dressing*; whereas, if in the prime of *Growth* they
 “ had

“ had been taken away close all but one *Top*, and clean
 “ by the *Bulk*, the Strength of all the *Sap* should have
 “ gone to the *Bulk*, and so he would have recover’d
 “ and cover’d his *Knots*, and have put forth a fair, long,
 “ and strait *Body* for *Timber*, profitable, huge, great of
 “ *Bulk*, and of infinite Last.

“ If all *Timber Trees* were such (will some say) how
 “ should we have crooked Wood for *Wheels*, *Coorbs*,
 “ &c?

“ *Answer*, Dress all you can, and there will be
 “ enough *crooked* for those Uses.

“ More than this, in most Places they grow so thick,
 “ that neither themselves nor *Earth*, nor any thing un-
 “ der or near them can thrive, nor *Sun* nor *Rain* nor
 “ *Air* can come at them.

“ I see a Number of *Hags*, where out of one *Root*
 “ you shall see three or four (nay more, such is Men’s
 “ unskilful greediness, who desiring many, have none
 “ good) pretty *Oaks* or *Asbes* strait and tall; because
 “ the *Root* at the first *Shoot* gives *Sap* amain: But if
 “ One only of them might be suffer’d to grow, and
 “ that well and cleanly pruned all to his very *Top*, what
 “ a *Tree* should we have in time, and we see by those
 “ *Roots* continually and plentifully springing, notwith-
 “ standing so deadly wounded, what a *Commodity*
 “ should arise to the *Owner* and the *Commonwealth*, if
 “ Wood were cherish’d and orderly dress’d. The
 “ waste *Boughs* closely and skilfully taken away, would
 “ give us store of *Fences* and *Fuel*, and the *Bulk* of the
 “ *Tree* in time would grow of huge length and bigness.

And now from what has been said relating to the
 Cleansing, Dressing and Pruning of *Woods*, two Things
 naturally offer to the Benefit of the Proprietors: *First*,
 That the Profit which will accrue from the Fall of
 distemper’d and decaying *Timber* and *Underwood*, will af-
 ford a Sum of Money sufficient to make large *Plantati-*
ons: And, *Secondly*, the *Trees* which remain standing af-
 ter this Weeding is perform’d, will grow and prosper
 exceedingly, by being then at liberty to receive a great-
 er quantity of *Nourishment* from the *Earth*, and by en-
 joying

joying such a Proportion of *Air* as their Age and Strength will require.

CHAP. V.

The Method of Planting an Acre of Ground with TIMBER-TREES and UNDER-WOOD; with the Profits which will arise from that Plantation in Nine Years, Seventeen Years, and Twenty five Years after Planting.



IF we consider the many Advantages this Nation in general has receiv'd from the *Timber* of its own Growth, how by its powerful Fleets (the Off-spring of its Oaks) *England* has gain'd the Dominion of the Seas, and now enjoys the Benefits of an Universal Commerce; without mentioning the Advantages it affords to every particular Owner of it: It is wonderful to me, that the propagating of *Timber*, a Commodity so valuable and ornamental, should be so little encouraged now-a-days among us, when our natural *Store* is so near being consumed, that to all appearance in a few Years time, we may be forced to seek it in foreign Countries.

Now, if I may be allow'd to judge in this Case, I conceive that the present Decay of our *Timber* may depend upon one or other of the following Reasons.

First, That the making *New Plantations* will be an immediate Expence to us: Or,

Secondly, That we cannot hope to reap any Profit to our selves from such *Plantations* as might be made in our times; or else,

Thirdly, That many Gentlemen who are already Masters of *Woods*, receive little Profit from them for want of due Care and Management.

The first and last of these Objections are answer'd, I think, in the foregoing Chapter, where the Advantages of Cleaning and Dressing of *Woods* are set down; in that not only *Money* is provided thereby to answer the Expence of *New Plantations*, but also the standing *Trees* will be put into a thriving Condition.

It

It remains now for me to answer the other Objection, viz. That we cannot propose to reap any Profit to our selves from the *Plantations* which might be made by us. But I hope the Method which I shall herein propose, will give full Satisfaction to that Point.

For which end I would recommend that every *Plantation* which shall be made either in this present Age or hereafter, may consist partly of *Forrest* or *Timber-Trees*, and partly of *Coppice* or *Underwood*.

Now the *Underwood* which I propose to be planted and intermix'd among the *Timber-Trees* or *Standards*, may be cut in eight or nine Years after Planting, and so from time to time every eighth Year will produce a very considerable Return, as will appear hereafter in a stated Account.

Secondly, The *Plants* for *Underwood*, which will encompass on every Side the young *Timber-Trees*, will not only shelter them from Blasts of Wind, which might be hurtful to them, but will also (by keeping off the circum-ambient Air) draw them into strait and tall *Trees*, 'till they can shift for themselves, and are strong enough to bear the Severity of the Weather.

But to proceed, let us make choice of such Ground to plant upon, as may not be thought proper for Corn, or at least such as will yield only a poor Crop of Grain: I suppose such Land will be worth about five Shillings per Acre by the Year, and by all Means let it be, if possible, near some Navigable River, for the greater Ease and Cheapness of Carriage. Now as I have before hinted, that as the Land is, so must we allot the proper *Plant* for it, I only wish it may be deep enough to nourish the *Oak* and *Ilex*, which are *Tap-rooted Plants*, and therefore delight in deep Soil.

Supposing then we are fortunate enough to meet with an Acre of Ground proper for *Oaks*, we must first encompass it with a good Fence, and then either dig or plough the Land at a proper Season, to lie fallow for some time, 'till the *Turf* be mellow'd and fit for our Purpose.

An *Acre* of Ground contains 160 Square *Perch* or *Rods*, each *Rod* being 16 Foot and a half. This Quantity of Land must be fenced about with a Ditch six Foot wide, three Rows of *Quicksetts* planted upon the Sides of its Banks at a Foot distance from each other, and a dry Hedge on the Top.

A Labouring Man working for *one Shilling per diem*, may prepare nine Foot of the Ditch in length in one Day, and cut Stakes and Bushes, and make about five *Rod* of the dry Hedge in a Day, so that he may prepare the Hedge, make the Ditch, plant three Rows of *Quicksetts*, and pay the Expence of them after the Rate of *two Shillings per Hundred*, for about *three Shillings the Perch*, so will the whole Charge of making a Fence about an *Acre* of Land be *Seven Pounds Sixteen Shillings*, but we may fence in two *Acres* of Land after the same Rate, being 32 *Perch* long, and ten *Perch* wide, for *nine Pounds six Shillings*, for the same Reason that if *one Hundred Hurdles* will hold a *thousand* Sheep, *two Hurdles* added to them will fold *two thousand* Sheep, that is, if the Sheep Pen has 49 *Hurdles* on each Side, and *one* at each End, it just contains half the Quantity of Ground that it would do, if it had the Breadth of *two Hurdles* at the Ends. N. B. A *Pole* or *Perch* planted with three Rows of *Quicksetts* will take up about 48 *Plants*, so will there be required to plant about an *Acre* 2496 *Plants*.

Thus having provided a good Fence to defend our young *Plantation* from Dangers of Cattle and other Inconveniencies, the next thing to be done, is to prepare the enclosed Land for *Planting*, which may be perform'd several Ways.

Supposing the Land to be encumber'd in the worst Manner with *Bushes*, *Whinns*, or *Furze*, &c. so that a Plow cannot be used upon it, then may it be dug and clean'd for about *six Pence* the square *Perch*; the whole *Acre*, if it be dug at that Rate, will come to *four Pounds*. But if the Ground should happen to be in that State that a Plough can work in it, an *Acre* may be plow'd for about *twelve Shillings*.

The

The Land being thus prepared, one *Acre* will contain forty Plants of *Oak* at 33 Foot Distance, and as I have hinted before, that all *tap-rooted* Trees are endanger'd by removing, and that when they are *transplanted*, they seldom come to the Perfection of those which are raised from *Seed*, and remain always in the same Place; I shall therefore recommend that forty *Beds* of good natural *Soil* be prepared on the *Acre* of Land at the aforesaid Distance of 33 Foot from each other, and that in each *Bed* five or six *Acorns* be planted about four Inches deep in *February*, which Season I chuse rather than *Autumn*, because the Over-wet of some Winters might rot the Seeds, or *Mice*, *Squirrels*, and such like *Animals*, might destroy them.

These forty *Beds* may be well prepared by one Man in three Days, at one *Shilling per diem*, two hundred *Acorns* may be worth about *six Pence*, and the planting of them be worth about *six Pence* more, which makes in all *four Shillings*.

The *Acre* of Land being thus sown with *Oaks*, we may inter sow the remaining Part of the Ground with *Asb-Keys* which have been kept the Winter in dry Sand, these will turn to very good Account for *Underwood*, and the Land is already dug or plow'd for that Purpose.

One Bushel of *Asb Keys* may be worth *Two Shillings*, the Sowing them *One Shilling*, and the Harrowing the Ground after Sowing will be worth *Five Shillings* more, in all *Eight Shillings*. When the *Oaks* and *Asbes* are come up, they must be hough'd and cleans'd from Weeds. One Man may do this Work in three Days, leaving the Distance of three Foot between the *Asben Plants*; the Expence of this weeding will be *three Shillings*; for I rate a Man's Work at *one Shilling per diem*, because I suppose such *Plantations* will only be made in those Places where Land is cheap, and consequently every thing else is valuable in Proportion.

The second Year we may draw some of the young *Oaks*, leaving a single *Plant* in each *Bed*; now it is likely that all the *Acorns* which were put into the Ground,

Ground, may not come up, therefore I would advise, as the surest Way to have our Expectations answered from the *Seeds* we sow, to try the Goodness of them before they are sown, which may be done by putting them in Water, and planting only those which sink quickly to the Bottom.

An *Acre* of Land thus fenced, dug, cleansed, and planted, comes to *twelve Pounds* and *eleven Shillings*, and two *Acres* dressed and planted in like Manner will cost *eighteen Pounds sixteen Shillings*.

But if the Land be clean enough to admit the Plough, then the Charge of *fencing, planting, &c.* of one *Acre*, will be *nine Pounds three Shillings*, and the Expence of two *Acres* dress'd in the same Manner, *twelve Pounds*.

In nine Years after this *Plantation* has been made, the *Ash Plants* will be fit to cut for *Poles* or *Hoops*, worth upon the Place *ten Shillings per Hundred*: If the *Plants* stand at a *Yard* Distance from each other, the *Acre* of Land will then contain about *4800 Plants*, which may be sold for *twenty four Pounds*.

The *Quickset Fence* must likewise be cut down, and will yield about ten Load of *Bushes*, we will suppose them only worth *Five Shillings per Load*; altho' near *London* they sell for four times as much.

The whole Charge of *fencing, digging, and planting* an *Acre* of Land with *Oaks* for *Timber*, and *Ash* for *Underwood*, with the Profit of the first nine Years *Growth*, may be seen in the following Account.

Account

Account of the Nine Years after Planting, or First Cutting.

	l.	s.	d.
Expence of fencing, digging and sowing an			
Acre of Land for <i>Timber</i> and <i>Underwood</i> .	12	11	0
Interest of the aforesaid Sum for 9 Years, at			
5 per Cent. —————	05	12	6
Rent of the Land for 9 Years, at 5 s. per			
Acre, per Annum, —————	02	05	0
For cutting 4800 <i>Ashen Poles</i> , one Man 5			
Days, at 1 s. per Diem, —————	00	05	0
Nine Years Expence, —————	20	13	6

	l.	s.	d.
Received for 4800 <i>Ashen Poles</i> , at 10 s. per			
Hundred, —————	24	00	0
Received more for 10 Load of <i>Bushes</i> , at			
5 s. per Load, —————	02	10	0
Nine Years Gain, —————	26	10	0
Nine Years Expence, —————	20	13	6
Neat Profit of the <i>Plantation</i> in 9 Years, —	05	16	6

After this Cutting we may cut again in eight Years time, and expect 4 or 5 Poles on each *Ashen Plant*.

Account of the Seventeen Years after Planting, or Second Cutting.

Rent of the Land for 8 Years, at 5 s. per	l.	s.	d.
Annum, ————	02	00	0
Expence of Cutting 19200 <i>Aspen</i> Poles, (reckoning four to each Plant) one Man 20	01	00	0
Days, at 1 s. per Diem, ————			
Seventeen Years Expence, ————	03	00	0

Received for 19200 <i>Aspen</i> Poles, at 10 s.	l.	s.	d.
per Hundred, ————	096	00	0
Received more for 10 Load of Bushes, at			
5 s. per Load, ————	002	10	0
Gain'd clear of Expences by the first Cutting, ————	005	16	6
The Interest which might be gain'd on 5 l.			
16 s. 6 d. in eight Years at 5 per Cent. is	002	06	0
about ————			
Seventeen Years Gain, ————	106	12	6
Seventeen Years Expence, ————	003	00	0
Neat Profit of the Plantation in 17 Years after Planting, ————	103	12	6

Account

*Account of Twenty five Years after
Planting, or Third Cutting.*

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Rent for 8 Years, at 5 s. the <i>Acre per Annum</i> ,	02	00	0
Expence of Cutting 19200 <i>Aspen Poles</i> ,	01	00	0
one Man 20 Days at 1 s. <i>per Diem</i> , — }			
Twenty five Years Expence — — —	03	00	0
Received for 19200 <i>Aspen Poles</i> , at 10 s.	09	00	0
<i>per Hundred</i> , — — — — — }			
Received for ten Load of Bushes, at 5 s.	00	10	0
<i>per Load</i> , — — — — — }			
Gain'd clear of Expences by the second Cut- ting, — — — — — }	10	3	12 6
The Interest which might be gain'd on the aforesaid Sum in 8 Years at 5 <i>per Cent</i> .	04	1	08 0
Twenty five Years Gain, — — — — —			
Twenty five Years Expence, — — — — —	00	3	00 0
Neat Profit of the <i>Plantation</i> in 25 Years,	24	0	10 6
To which we may add the Value of the forty Oaks then growing in the said <i>Plan- tation</i> , worth 10 s. <i>per Tree</i> , — — — }	20	00	0
In all — — — — —			
	26	0	10 6

By the foregoing Account we find that an *Acre* of
Land, planted as I direct, may produce the Sum of
260 l. 10 s. 6 d. in the space of *Twenty five Years*, clear
of

of all Expences of Planting, and value of the Land, and the Oaks if they are still continued growing, will yet produce a more considerable Return to the Owner, or his Family after him.

By the *Example* of this *Plantation*, others may be made with different Kinds of *Trees*; and if the Planter has due Regard to the *Soils* proper to what he designs to plant, he may expect a Return for his Labour and Industry answerable to what I have mention'd in this Account, and if his Ground happens to be already fenced for his Purpose, and is capable of admitting a Plough upon it, he may yet reap a much more considerable Profit from his *Plantation*.

I shall now conclude this Treatise with acquainting my Reader with what he is to expect in the Second Part; I purpose in that to treat of every thing (so far as my Experience will permit) which may tend to the Improvement of the *Parterre* or *Flower-Garden*; wherein I shall first give the Explanation of a new Invention, for the more ready designing and laying out of *Garden-Platts*, by which *Instrument* it will be possible to produce more Variety of Figures for Gardens in an Hour's time, than we can find in all the printed Books now extant: I shall then give my Reader the best Methods of raising and propagating all sorts of Flowers: And lastly, endeavour to prescribe such Rules for the adorning of *Gardens*, as may make them delightful in every Month of the Year. And now that this Work may be the more compleat, I desire all curious Gentlemen will communicate to me what new Experiments they have made in *Planting* and *Gardening*, directed to the Publisher of this First Part; which Favours I shall gratefully acknowledge, and insert in the succeeding Sheets.

F I N I S.



NEW
IMPROVEMENTS
OF
Planting and Gardening,
BOTH
Philosophical *and* Practical:
Explaining the
MOTION of the SAPP
AND
GENERATION of PLANTS.

With other Discoveries never before made Publick,
for the Improvement of FOREST-TREES,
FLOWER-GARDENS, or PARTERRES;
with a New Invention whereby more Designs
of GARDEN-PLATTS may be made in an
Hour, than can be found in all the Books now
extant. Likewise several rare Secrets for the
Improvement of FRUIT-TREES, KITCHEN-
GARDENS, and GREEN-HOUSE PLANTS.

Adorn'd with COPPER PLATES.

———*Hortos quæ Cura Colendi*
Ornaret——— Virg. Georg. iv.

PART II.

The Fourth Edition Corrected.

By RICHARD BRADLEY, Fellow of the
ROYAL SOCIETY.

DUBLIN:

Printed by and for GEORGE GRIERSON, at
the Two Bibles, in Essex-Street. M.DCC.XX.

IMPROVEMENTS
OF
PLANNING AND CONSTRUCTION
BOTH
PHILOSOPHICAL AND PRACTICAL:
IN THE
MOTION OF THE SAPS
AND
GENERATION OF PLANTS.

Which of the Discoveries never before made publickly
for the improvement of Forest-Trees;
in the Gardens, or Plantations;
the New Invention whereby more Design
of Garden-Plants may be made in an
Hour, than can be done in all the Books now
current. Likewise the Society for the
improvement of the
GARDENS, and
PLANTATIONS.



Adorn'd with
Owens
PART II
By Richard Bradley, Fellow of the
ROYAL SOCIETY
Printed by and for George Ginnerton, at
the Bible, in the Strand.

ledg
Cur
this
Cav
Qua
Goo
mon
M
Rea
give
ensu
I
tion
Dra
Op
of i
I
and
gree
and
I



P R E F A C E.



THE first Part of my Book having met with a favourable Reception from the Publick, and many Persons of Quality and Honour having been pleas'd to send me their Observations on this Subject, my first Acknowledgment is due to them; and as their Remarks are very Curious, I promise to insert them in proper Places of this Work. Information is always welcome to me, and Cavils I shall not mind, tho' I have not a few from the Quarter from whence I presaged, but have had the Good Luck to have the most Objections, from the most Ignorant.

My Design in this Second Part I will propose to my Reader in the same manner as I did in the former, and give him a general View of what he is to expect in the ensuing Sheets.

In the first Place, my Reader will find the Description, and Use of my Invention for the more speedy Drawing or Designing of Garden-Platts; and I am of Opinion, that when he once understands the right Use of it, I shall have his Thanks for that Discovery.

I have then given the best Method of Propagating and Introducing all the Ornaments of a Garden, as *Evergreens, Flowering Shrubs, Perennial, and Annual Flowers, and Bulbous-rooted Plants*, with their different Heights,

P R E F A C E.

Beauties, and Times of Flowering. By these Means a Garden may have always something entertaining in it, while a successive Scene of Delight is kept up by a due Regard to the peculiar Seasons of each Flower.

There is one Particular which relates to this Subject that could be no where so well introduced as here, i. e. the general Irregularity and Inconsistency of dead Ornaments in Gardens. I shall only hint at a few. *Iron-Works* are often placed where there are no Prospects. We see many large *Statues* in small Gardens, and a few small ones in large Gardens. The misplacing of Ornaments in Gardens is another Fault, which is sometimes so absurd as to equal the mismanag'd Picture in *Horace*,

Delphinium Silvis appingit, Fluctibus Aprum.

Thus we view a *Neptune* in a dry *Walk*, and a *Vulcan* in the Middle of a *Fountain*.

These are so shocking to common Sense, that I think it sufficient only to take a cursory Note of them, to make them avoided.



CON.



CONTENTS

Of the SECOND PART.

CHAP. I.

Description and Use of a New Invention for the more speedy Designing of Garden-Platts; whereby we may produce more Variety of Figures in an Hour's Time, than are to be found in all the Books of Gardening now extant, Page 1

CHAP. II.

<i>Of Ever-Greens; their Culture and Use in Gardens,</i>	p. 5
Sect. I. <i>Of the Holly,</i>	ibid.
Sect. II. <i>Of the Yew-Tree,</i>	p. 10
Sect. III. <i>Of the Laurus-tinus,</i>	p. 11
Sect. IV. <i>Of the Bay-Tree,</i>	p. 12
Sect. V. <i>Of the Box-Tree,</i>	p. 13
Sect. VI. <i>Of the Laurel,</i>	p. 14
Sect. VII. <i>Of the Phillyrea,</i>	p. 15
Sect. VIII. <i>Of the Alaternus,</i>	p. 16
Sect. IX. <i>Of the Juniper,</i>	ibid.
Sect. X. <i>Of the Piracantha,</i>	p. 17
Sect. XI. <i>Of the Ilex,</i>	p. 18
Sect. XII. <i>Of the Arbutus, or Strawberry-tree,</i>	p. 19
Sect. XIII. <i>Of the Italian Green-Privet,</i>	p. 20

CHAP. III.

<i>Of Flowering-Trees and Shrubs, their Culture and Use in Gardens,</i>	p. 22
PART. II.	Sect. I.

CONTENTS

Sect. I. <i>Of the Jasmine,</i>	p. 23
Sect. II. <i>Of the Wood-bind, or Honey-Suckle,</i>	p. 24
Sect. III. <i>Of the Lilac,</i>	p. 25
Sect. IV. <i>Of the Syringa,</i>	p. 26
Sect. V. <i>Of the Rose-Tree and its Kinds,</i>	ibid.
Sect. VI. <i>Of the Guelder-Rose,</i>	p. 28
Sect. VII. <i>Of the Spanish Broom,</i>	ibid.
Sect. VIII. <i>Of the Laburnum,</i>	p. 29
Sect. IX. <i>Of the Mezereon,</i>	ibid.
Sect. X. <i>Of the Spirea Frutex,</i>	p. 30
Sect. XI. <i>Of the Arbor Judæ,</i>	ibid.
Sect. XII. <i>Of the Maracoc, or Passion-Tree,</i>	p. 31
Sect. XIII. <i>Of the Senna,</i>	p. 33
Sect. XIV. <i>Of the Tulip-Tree,</i>	p. 34
Sect. XV. <i>Of the Pomegranate,</i>	p. 35
Sect. XVI. <i>Of the Althea-Frutex,</i>	ibid.
Sect. XVII. <i>Of the Double-blossom'd Virgins-bower, the Maxechitl, or Scarlet Jasmine, Perwinkle, and French Willow,</i>	p. 36

CHAP. IV.

Of Perennial Flowers, the tallest Blowers,	p. 37
Sect. I. <i>Of the Holyhocks</i>	p. 38
Sect. II. <i>Of the Perennial Sun-Flower,</i>	p. 39
Sect. III. <i>Of the Asters or Starworts,</i>	ibid.
Sect. IV. <i>Of the Everlasting Bea,</i>	p. 40
Sect. V. <i>Of the Campanula Pyramidalis and Canterbury Bells,</i>	p. 41
Sect. VI. <i>Of the Primrose-Tree,</i>	ibid.
Sect. VII. <i>Of the Lillies and Martagons,</i>	p. 42
Sect. VIII. <i>Of the Foxglove,</i>	p. 44
Sect. IX. <i>Of Mulleins and Moth Mulleins,</i>	ibid.
Sect. X. <i>Of the Acanthus,</i>	ibid.
Sect. XI. <i>Of the White Hellebore,</i>	p. 45

CHAP. V.

Of Middle-siz'd Perennial Flowers,	p. 45
Sect. I. <i>Of the Valerian,</i>	p. 46
Sect. II. <i>Of the Perennial Cyanus, or Blue-Bottle,</i>	ibid.
Sect. III.	

Of the SECOND PART.

Sect. III. Of the Monks-Hood, or Blue-Helmet-Flower,	p. 47
Sect. IV. Of the Rose-Campion,	ibid.
Sect. V. Of the Double-flower'd Rocket,	ibid.
Sect. VI. Of Batchelors-Buttons,	p. 48
Sect. VII. Of the Scarlet-Lychnis,	ibid.
Sect. VIII. Of the Sweet-William,	p. 49
Sect. IX. Of the Carnation or July-Flower, <i>vulg.</i> Gilly-Flower, and Pinks their several Kinds,	ibid.
Sect. X. Of the Wall-Flower,	p. 54
Sect. XI. Of Stock-July-Flowers, <i>vulg.</i> Gilly-Flowers,	p. 55
Sect. XII. Of the French Honey-Suckle,	p. 56
Sect. XIII. Of the Flos-Cardinalis,	p. 57

C H A P. VI.

Of the lowest Kinds of Perennial Flowers,	p. 57
Sect. I. Of the Polyanthos,	p. 58
Sect. II. Of the Auricula,	p. 59
Sect. III. Of the Black-Hellebore, or Christmas-Flower,	p. 63.
Sect. IV. Of the Gentianella,	p. 64.
Sect. V. Of the Hepatica,	ibid.
Sect. VI. Of the Violet,	p. 65
Sect. VII. Of the Daisies,	ibid.
Sect. VIII. Of Thrift or Sea Gilly-Flower,	p. 66

C H A P. VII.

Of Bulbous or Onion-rooted Plants,	p. 66
Sect. I. Of the Tulip,	ibid.
Sect. II. Of the Ranunculus,	p. 70
Sect. III. Of Anemonies,	p. 71
Sect. IV. Of the Jonquil, Narcissus-Polyanthos, and others of the same Tribe,	p. 72
Sect. V. Of the Hyacinth,	ibid.
Sect. VI. Of the Cyclamen or Sow-Bread,	p. 73
Sect. VII. Of the Guernsey-Lilly,	ibid.
Sect. VIII. Of the Gladiolus, Fritillaries, and Iris.	p. 74
Sect. IX.	

CONTENTS, &c.

Sect. IX. *Of the Colchicum, and Crocus,* ibid.
 Sect. X. *Of the Snow-drop, Winter-Aconite, Dens-*
caninus, and Orchis, or Satyrion, p. 77

CHAP. VIII.

Of Annual Flowers, and Plants, their Culture and Ma-
nagement in Gardens, p. 76

Sect. *Of Annuals to be rais'd in a Hot-Bed,* p. 77

Sect. II. *Of Annual Plants to be sown in the Natural*
Ground, p. 79

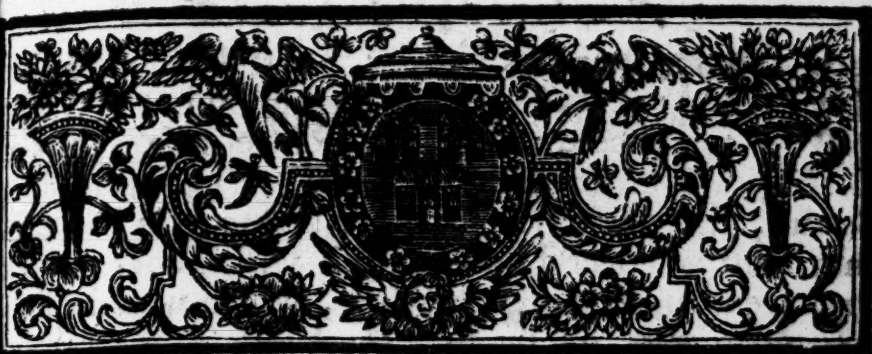
CHAP. VI.



NEW

Descri
 mon
 by
 Tim
 non

Men
 with
 men
 of m
 whic
 whic
 up th
 P



NEW
IMPROVEMENTS
OF
Planting and Gardening,
BOTH
Philosophical and Practical.

CHAP. I.

Description and Use of a NEW INVENTION for the more speedy Designing of GARDEN-PLATS; whereby we may produce more Variety of Figures in an Hour's Time, than are to be found in all the Books of Gardening now extant.



SINCE the Instrument I now design to treat of has afforded some Pleasure to many of my Acquaintance, I have been easily perswaded to make it publick. It is of that Nature, that the best Designers or Draughtsmen may improve and help their Fancies by it, and may with more Certainty hit the Humour of those Gentlemen they are to work for, without being at the trouble of making many Varieties of *Figures* or *Garden-Plats*, which will lose time, and cause an unnecessary Expence, which frequently discourages Gentlemen from making up their Gardens. In short, the Charge of the Instru-

PART II. B *ment*

ment is so small, and its Use so delightful and profitable, that I doubt not its favourable Reception in the World.

BUT to proceed: We must chuse two Pieces of *Looking-glass* of equal Bigness, of the Figure of a long Square, five Inches in Length, and four in Breadth; they must be cover'd on the Back with Paper or Silk, to prevent rubbing off the Silver, which would else be too apt to crack off by frequent Use. This Covering for the Back of the *Glasses* must be so put on, that nothing of it may appear about the Edges on the bright Side.

THE *Glasses* being thus prepared, they must be laid Face to Face, and hinged together, so that they may be made to open and shut at Pleasure, like the Leaves of a Book; as for *Example*, the first *Figure* shows us the Back of the two *Glasses*, *A* and *B*, join'd together by Hinges *CC* and *DD*, so that they may be open'd or shut to any part of a Circle; and now the *Glasses* being thus fitted for our purpose, I shall proceed to explain the Use of them.



DRAW a large Circle upon Paper, divide it into three, four, five, six, seven or eight equal Parts, which being done, we may draw in every one of the Divisions, a Figure at our Pleasure, either for *Garden-Plats* or *Fortifications*; as for *Example*, in the second *Figure* we see a Circle divided into six Parts, and upon the Division mark'd *A* is drawn part of a Design for a *Garden*. Now to see that Design entire, which is yet confus'd, we must place our *Glasses* upon the Paper, and open them to the sixth part of the Circle, (*i. e.*) one of them must stand upon the Line *b* to the Center, and the other must be open'd exactly to the Point *c*, so shall we discover an entire *Garden-Plat* in a Circular Form, (if we look in to the *Glasses*) divided into six Parts, with as many Walks leading to the Center, where we shall find a Representation of an *Hexagonal Figure*.

WE may more plainly see how the *Glasses* ought to be placed upon the Design, by viewing the third *Figure*. The Line *A* where the *Glasses* join, stands immediately over the Center of the Circle, the Glass *B* stands upon the Line drawn from the Center to the Point *C*, and

the Glas *D* stands upon the Line leading from the Center to the Point *E*; the *Glasses* being thus placed, cannot fail to produce the compleat *Figure* we look for; and so whatever equal part of a Circle you mark out, let the Line *A* stand always upon the Center, and open your *Glasses* to the Division you have made with your Compasses. If, instead of a Circle, you would have the Figure of a *Hexagon*, draw a streight Line with a Pen from the Point *c* to the Point *d* in the second *Figure*, and by placing the *Glasses* as before, you will have the *Figure* desired.

So likewise a *Pentagon* may be perfectly represented, by finding the fifth Part of a Circle, and placing the *Glasses* upon the *Out-lines* of it; and the fourth Part of a Circle will likewise produce a Square by means of the *Glasses*, or by the same Rule, will give us any *Figure* of equal Sides. I easily suppose that a curious Person by a little Practice with these *Glasses* may make many Improvements with them, which perhaps I may not have yet discover'd, or have, for Brevity sake, omitted to describe.

IT next follows that I explain how, by these *Glasses*, we may from the Figure of a *Circle* drawn upon Paper, make an *Oval*; and also by the same Rule represent a long *Square* from a perfect *Square*. To do this, open the *Glasses* and fix them to an exact *Square*, place them over a Circle and move them to and fro 'till you see the Representation of the Oval Figure you like best; and so having the *Glasses* fix'd, in like Manner move them over a square Piece of Work 'till you find the *Figure* you desire of a long *Square*. In these Tryals you will meet with many Varieties of Designs. As for Instance, the fourth *Figure*, altho' it seems to contain but a confused Representation, may be varied into above 200 different Representations by moving the *Glasses* over it, which are open'd and fix'd to an exact *Square*. In a Word, from the most trifling Designs, we may by this Means produce some Thousands of good Draughts.

BUT that the fourth *Figure* may yet be more intelligible and useful, I have drawn on every Side of it a Scale divided into equal Parts, by which Means we may ascertain

certain the just Proportion of any Design we shall meet with in it.

I have also mark'd every side of the fourth *Figure* with a Letter, as *A, B, C, D*, the better to inform my Reader of the Use of the Invention, and put him in the way to find out every Design contain'd in that *Figure*.

Example I. TURN the Side *A* to any certain Point, either to the *North*, or to the Window of your Room, and when you have open'd your *Glasses* to an exact *Square*, set one of them on the Line of the side *D*, and the other on the Line of the side *C*, you will then have a square *Figure* four times as big as the engrav'd Design in the Plate; but if that Representation should not be agreeable, move the *Glasses* (still open'd to a *Square*) to the Number 5, of the side *D*, so will one of them be parallel to *D*, and the other stand upon the Line of the side *C*, your first Design will then be vary'd; and so by moving your *Glasses* in like Manner from Point to Point, the Draughts will differ every Variation of the *Glasses*, 'till you have discover'd at least fifty Plans differing from one another.

Example II. TURN the side mark'd *B*, of the fourth *Figure*, to the same Point where *A* was before, and by moving your *Glasses* as you did in the former Example, you will discover as great a Variety of Designs as had been observ'd in the foregoing Experiment; then turn the side *C* to the Place of *B*, and managing the *Glasses* in the Manner I have directed in the first Example, you may have a great Variety of different Plans, which were not in the former Tryals; and the fourth side *D* must be managed in the same Manner with the others; so that from one Plan alone, not exceeding the Bigness of a Man's Hand, we may vary the *Figure* at least two hundred times, and so consequently from five *Figures* of the like Nature, we might shew about a thousand several Sorts of *Garden Plats*, and if it should happen that the Reader has any Number of Plans for *Parterres* or *Wilderness* Works by him, he may by this Method alter them at his Pleasure, and produce such innumerable Varieties, that it is not possible the most able Designer could ever have contrived.

Fig. I

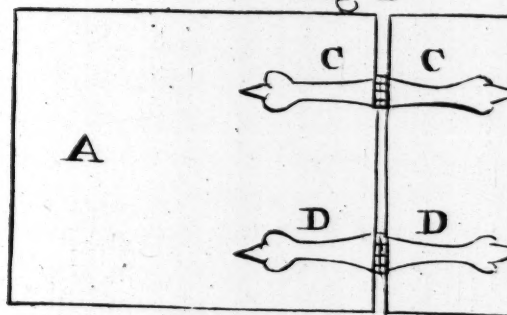


Fig. III.

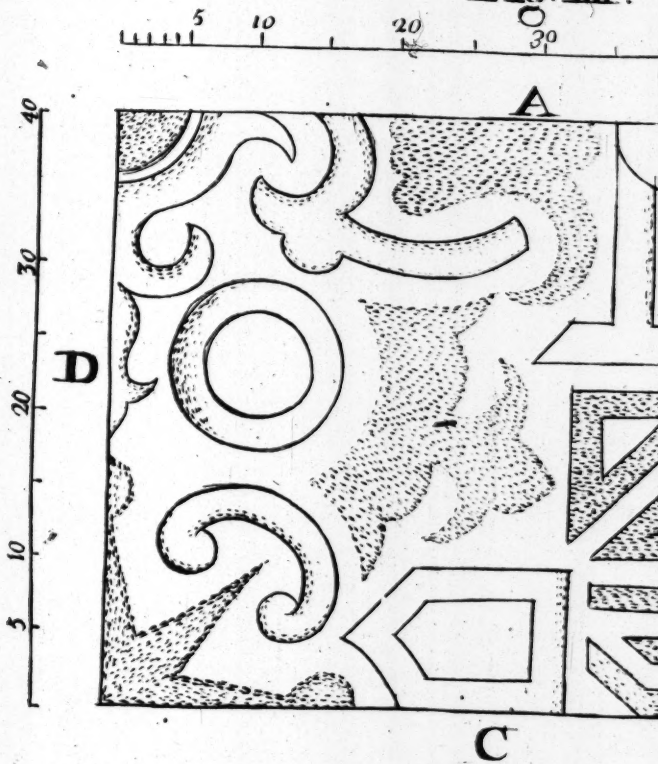


Fig. I

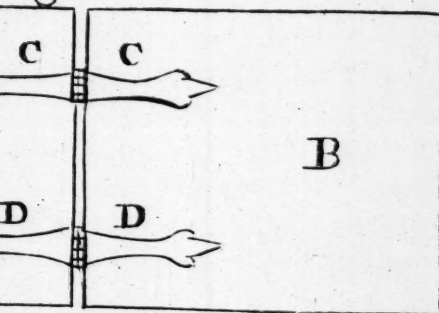


Fig II

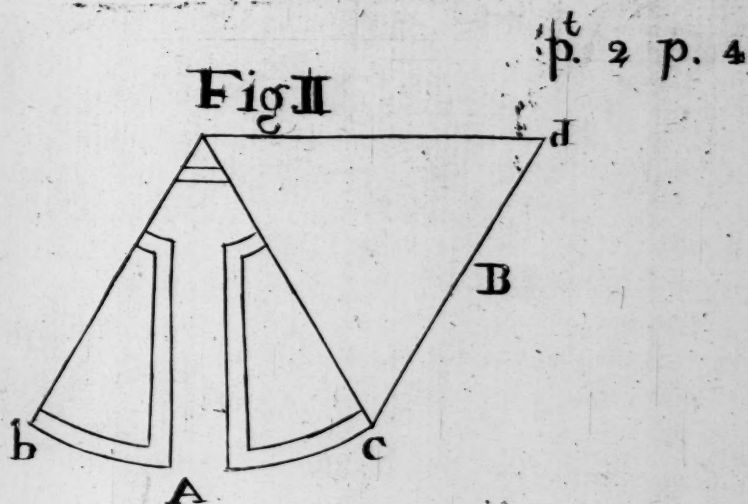
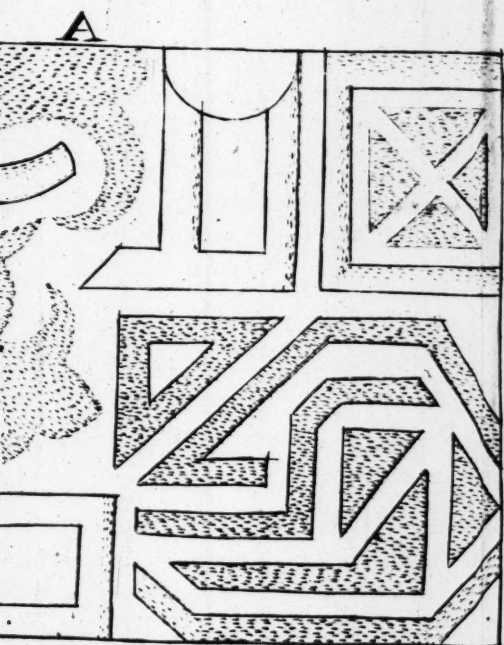
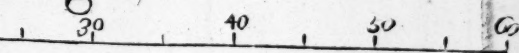
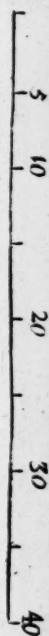


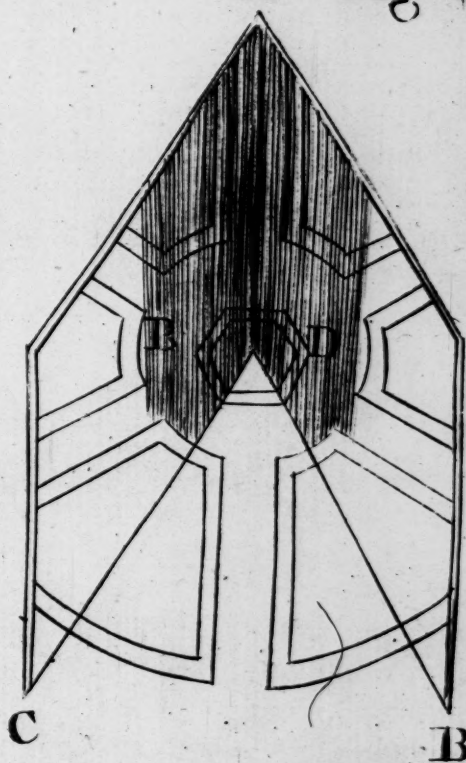
Fig. III.



B



A Fig. III.



PLANTING and GARDENING.

AND seeing I have given such Directions in this Chapter, as I hope may inform the Curious of the Use of this new-invented Instrument, I think it may not be improper to advertise that the Publisher of these Papers is provided with *Glasses* of several Sizes ready fitted up for the Experiment at the following Prices; the small sort at three Shillings, and the other at five Shillings.

CHAP. II.

Of EVER-GREENS, *their Culture and Use in GARDENS.*

I Am in this Chapter to speak of the Culture of *Ever-Greens*, and their Use in Gardens. They are so ornamental where they are rightly managed, that I think no Garden can be compleat without 'em; they make beautiful and useful Hedges, and in single *Plants*, when they have been order'd by a curious and skilful Hand, they are so many growing Monuments of the Art of Gardening. But to come to Particulars, the *Ever-Greens*, which are commonly propagated by the Gardeners, are *Hollys*, *Yews*, the *Laurus-tinus*, *Bay*, *Box*, *Laurel*, *Philarea*, *Alaternus*, *Juniper*, *Piracantha*, *Ilex*, *Arbutus*, and the *Ever-Green Privet*. These have every one their proper Places in Gardens, with respect to their several Stages of *Growth*. Some of them may be kept in Shape and Compass with very little Trouble, while others are too apt to out-grow the Care of the Gardener, let him be never so vigilant.

SECT. I.

Of the HOLLY.

TO consider these singly, I shall begin with the *Holly*, which is, in my Opinion, the most beautiful of all the rest. It will grow to a very large Tree. I have seen *Plants* of this Kind above sixty Foot high in the *Holly Walk* near *Frensham* in *Surry*, in which Place they delight extreamly; the *Soil* is dry, rather inclining to *Sand* than *Loam*: The *Holly* is a *Tap-rooted*

Plant, and therefore does not love transplanting, unless the *Roots* have been often prun'd in the Nursery, by digging about it, which a careful Gardener will frequently do, that they may rise with a Ball of Earth when they are to be removed, but yet notwithstanding all his Care, it is adviseable to plant them in Baskets so soon as they are taken up, that the Earth which riseth with the *Roots*, may not break or fall from them in the Carriage from one Place to another: The Baskets they are planted in, must be set with them in the Places where they are to remain, and will rot in a few Months, and not any ways hinder the Trees from drawing the Nourishment they require from the adjacent Earth, which should be natural Soil (without the least Mixture of *Dung*) and cannot well be too barren. The Removal of this Tree ought to be rather in *September* than towards the Spring, to save the Trouble of Watering, which oftentimes puts the Gardener to great Charge and Inconveniency. The *Berries* of this *Plant* when they are ripe should be gather'd, and after being laid to sweat for some Time, may be put in *Sand* or *Earth*, *S. S. S.* 'till the *Autumn* following, when they may be sown in the Nursery Beds. Now as these will lie in the Ground for a long Time before they begin to spring, I would advise the following Method to be made use of in order to forward their *Germination*, and thereby to gain a Year at least in their *Growth*. I have observ'd that *Seeds* or *Berries* of this Kind which have been eaten by Fowls and pass thro' their Bodies, have began to vegetate soon afterwards; we have therefore no more to do than to contrive a Mixture which shall have in it a Heat and Moisture resembling that in the Bodies of Birds, and to lay the *Seeds* in it for a few Days before we sow them, which will answer the End we desire: For this Purpose therefore provide a Bushel of *Bran*, in which, after having mix'd your *Seeds* or *Berries*, wet the whole very well with Rain or Pond-Water, and let your *Preparation* remain for ten Days without any Disturbance in a Vessel of Wood or Stone. About three Days after the Mixture has been prepared it will begin to heat, and so continue to ferment for thirty or forty Days, if it be carefully

careful
ter as
prepar
vegeta
ment
For th
incom
greatl

TH
Berrie
or fiv
up for
done
but o
Trees,
stanc
better
in.
about
Wate
the G
with
a Ma
tough
and t
purg
cond
one t
them
it be

M
Plan
not f
well
built
Vern
able
the r
H
rial
to g

carefully sprinkled from Time to Time with warm Water as it begins to dry. The Heat of this wet *Bran* will prepare the *Berries* mix'd with it, and put them into a vegetable Posture in about a Week's time after the Ferment has began, and then may be sown in the Nursery. For this new-invented artificial Heat I am oblig'd to the incomparable Sir *Isaac Newton*, to whom every Art is greatly obliged.

THE young *Stocks*, which may be thus rais'd from the *Berries*, will be fit to graft on, or be inoculated at four or five Years Growth, if they are design'd to be train'd up for Ornament of our Garden. The *Grafting* must be done in *March*, and the *Inoculating* or *Budding* in *July*; but otherwise if they should be made use of for *Standard-Trees*, or *Hedges*, let them be planted at their proper Distances while they are very young, that they may the better accustom themselves to the *Soil* they are to grow in. *Birdlime* is made of the *Bark* of this *Tree* gather'd about *Midsummer*, boil'd about twelve Hours in Spring-Water, 'till the *Green Bark* separates from the others; the *Green* must then be laid in a cool Place and cover'd with *Weeds* or *Fern* for a Fortnight, or 'till it become a *Mucilage*, then beat it in a Stone Morter, 'till it be a tough Paste, and wash it well in some running Water, and then putting it in an earthen Vessel to ferment and purge it self for four or five Days, wash it for the second Time, and put it into a fresh Pipkin, adding to it one third Part of *Goose-grease* well clarified, incorporate them on a gentle Fire, stirring your Composition 'till it be cold, and keep it in Urine for your Use.

MR. *Evelyn* commends the *Holly* above all other *Plants* for *Hedges* and strong *Fences*; and indeed was it not for the Benefit of *Wall-Fruit*, I should prefer a thick well grown *Holly* Hedge before any Wall that could be built, the beautiful *Green* of their armed *Leaves*, and the Vermilion Colour of their *Berries*, afford a most agreeable Prospect in every Month of the Year, and disdain the rudest Attacks of the Weather, Cattle, &c.

HAVING now set down what I think is most material relating to the common or plain-leav'd *Holly*, I am to give some Account of the variegated Sorts of *Hollies*,

which are so much esteem'd by the Curious, and contribute to the Ornament of our Gardens. Of these we have about twenty different Kinds which are distinguish'd from one another by the Names of those who first discover'd them. It would be troublesome to relate them here, and would be of very little Service to my Reader, since in the whole Catalogue of them it would be impossible to discover the Beauty or Imperfections of any one among them; let it suffice that every Gentleman please himself rather by examining them in the Nurseries, of which there are so many about *Dublin*. I shall only here take Notice that there are three Sorts of *Stripes* in *Vegetables*, those whose Leaves are edged with Cream Colour, those edged with Yellow, and the bloach'd Sorts, as the Gardeners call them: And it is a certain Rule, that whatever Plant has its *Leaves* edged about with these distemper'd Colours, will always remain variegated, without putting forth so much as one plain *green Leaf*; and on the other Hand, such Plants as have their *Leaves* bloach'd, tinged or spotted in the middle, will seldom remain strip'd, if they be planted in good Ground, but from Time to Time will shoot out Branches intirely Green, and at length lose all their other Colours; from whence we may observe that the Sap, when it appears discoloured only towards the middle of the *Leaf*, is not then so much distemper'd, but that it may be restor'd by wholsom Nourishment, but that when the tinged Sap has reach'd the extream Parts of the *Leaves*, so much Venom is then mix'd with it, that it is impossible to overcome it by any Means, and even the *Fruit*, which is certainly fed with the most refin'd *Juices* of the Plant, is also equally corrupted with the same Poison, as its *Stripes* plainly signify.

ANOTHER Observation relating to strip'd Plants is, that when a Plant begins to bloach, a skilful Gardener may provoke the Poison which begins to tinge the *Leaves*, and by checking the Nourishment of the Plant, and giving it unwholsome Diet, may by Degrees envenom the whole, and produce what they call an *Edger*, i. e. a Plant, whose *Leaves* are edged with White or Yellow. Again there is another Experiment relating to this Case which

PLANTING and GARDENING. ▲ D

is very well worth our Notice, it was made and communicated to me by a curious Gardener, who had many Plants of the Common *Jessamine* with edged *Leaves*, upon which he engrafted Cions of the *Spanish Jessamine*, whose *Leaves* had not been known to stripe, the Cions of the *Spanish Jessamine* upon their budding forth produced *Leaves* bloached with Yellow, and I doubt not but they may be made *Edgers* with a little more Skill; from hence it appears, that when the most subtil *Juices* of a Plant are poison'd, any Plant which shall be fed from it will be envenom'd by it. It would therefore be well to sow the Seed of *Mistletoe* upon *Edged-Leav'd* Plants, to have it with variegated *Leaves*. What Relation these Observations may have to Animals, may be further consider'd by those whose Studies more immediately relate to the Health and Preservation of Animal Bodies. I shall proceed to consider the strip'd *Hollys*, with respect to their Figure and Use in Gardens; the Nature of this Plant is such, that it cannot be Pruned into those nice Figures, which others whose *Leaves* are small, have been framed to, therefore I cannot propose any other Form than that of a Pyramid, or a Ball or headed Plant. The first ought to be kept taper, ending in a sharp Point on the Top, and the headed Plants of them should be so prun'd, that their Heads may resemble the Cap of a *Mushroom*, which Figure, in my Opinion, is to be prefer'd before that of a *Globe*. These Plants, if they are well train'd up, and have their *Leaves* beautifully variegated, are very Ornamental, when they are mix'd skillfully with Plants of *Ever-greens*, such as *Yews*, *Laurustinus*, or the like.

I have read some where of a pretty Invention of planting *Ever-green Hedges* with *Columns* and *Pilasters* of variegated *Hollys* set in them at certain Distances, which must needs have a good Effect if they are well prun'd; and I think, if handsome Flower-Pots were placed on their Tops, so that a healthful Branch might go through each of them to be train'd into *Balls* or *Pyramids*, it would still contribute to the greater Beauty of the Design.

SECT. II.

Of the *YEW-TREE*.

THE *Yew-Tree* is very slow of Growth, and therefore produceth tough and hard Timber; in some Parts of *Surry* we find some Groves of this beautiful *Ever-green*, which consist of very large Trees, and seem rather to be the Produce of Nature than Art, the *Roots* are apt to break into many *Fibres*, and therefore this Plant delights in light Soil, and such as is commonly stiled Barren; the coldest Mountains produce this Tree more readily than the richest Soils, or more gentle Exposures, so that rich Manures are to be avoided in the Culture of this Plant, the *Berries* of it after they are cleaned from their Pulp, and well dry'd, may either be laid in Sand as I have directed those of the *Holly* before they are sown, or mix'd with the Bran and Water before-mention'd, for their more speedy Germination. The *Leaves* of the *Yew* are so small, that it is possible to bring this kind of Tree into any Form we desire, as the famous Plants now growing in the *Physick Garden* at *Oxford*, and that in the Church-Yard at *Hillingdon* near *Uxbridge*, may certify; I have seen great Varieties of Figures very well represented in Plants of this Sort, as Men, Beasts, Birds, Ships, and the like; but the most common Shapes which have been given it by the Gardeners, are either Conick or Pyramidal. It is of great Use for Hedges, and makes most agreeable Divisions in Gardens; it is customary to fence in the Quarters of Wilderness Works with these Plants, where they have a very good Effect; in a Word, there is no Difficulty in propagating this Plant, and little Hazard in the Removal of it; especially if the *Roots* of it are prun'd from Time to Time by digging about it, while it stands in the Nursery. Its Time of Transplanting is in *September*, or so soon as the Weather is open in the Spring Season.

SECT.

SECT. III.

Of the *LAURUS-TINUS*.

THE *Laurus-tinus* is a Plant whose Beauty chiefly consists in the Flowers which adorn it about *Christmas*, and most of the Winter Season; it may be raised from the Berries, managed in the same Manner as those of the *Holly*, but the most expeditious Way for the propagating of it, is from *Layers*, *i. e.* by laying down the youngest Branches of it in the Earth, about the Months of *September* or *October*, which will soon strike Root, and afford us Plants fit for Use. It is a quick Grower, but very seldom makes a large *Tree*, it is often train'd up to a headed Plant, and introduced among *Hollies* and *Yews* into the Parterre. But I should rather direct that it be planted against a Wall or in Wildernesses, where it may avoid the Knife for the sake of its Flowers, which an unskilful Hand often robs it of by untimely Pruning. It is to be noted, That this Plant like all other Exoticks, is naturally inclin'd to Blossom about the Time of the Spring, in its own Country. I have particularly observ'd that all Plants from the *Cape of Good-hope* make their strongest Shoots, and begin to Blossom towards the End of our Autumn, which is the Time of the Spring in that Part of *Africa* they were brought from, and so likewise all others from different Parts and Climates retain their Natural Course of Vegetation, for which Reason, such Exoticks should be prun'd in our Spring Season, that they may the better dispose themselves for strong Flowering Shoots in the Winter; but more of this in another Place. The *Laurus-tinus*, altho' it is impatient of Frost, delights to grow in shady and moist Places, and flourishes well in Loam without the Help of any rich Manure, which will forward its Growth too much, and by that Means make it too subject to feel Frosty Weather, and also to fling away its Sap in useless Shoots, which ever spoils the Blossoming of *Trees*, for the same Reason that Excess of Vigour is a Hindrance of Prolificity.

SECT. IV.

Of the *BAY-TREE*.

THE *Bay*, altho' it may be raised from *Layers*, *Suckers* or *Cuttings*, yet it grows much better if it be propagated from the *Berries*; however for the greater Satisfaction of my Reader, I shall speak particularly of each Way of raising this Plant. First then, if we propose to raise this Plant from *Layers*, we must bend down the tender Shoots to the Ground, and after having fasten'd them in the Earth with Hooks, cover them four or five Inches with fine Earth: This Work must be done about *October*, at which Time likewise the *Suckers* may be taken from about the Body of this *Tree*, with as much Root as can be got with them, plant them in shady moist Places, in gravelly Soil, without any rich Mixture, watering them well at first Planting, as all Plants ought to be on that Occasion, chiefly to settle the Earth close about their Roots. In *October* also we may set the *Cuttings* of *Bays* in Pots of fine Earth, two or three Inches deep, and preserve them under some Shelter during the Winter; they will with that Management alone strike Root, without the Help of a Hot-Bed.

IN the next Place, if we design to raise this Plant from the *Berries*, gather them when they are full ripe, and after having spread them abroad to sweat, keep them 'till the *February* following in dry Sand, then sow them on a Bed of Earth fresh dug, and sift over them some fresh natural Earth, about two Inches thick. If after this Work the Weather happen to be moist, you may expect them to come up in about six Weeks after sowing; these Seedlings require Shelter with Straw or Fern for the three first Winters, after which Time they should be transplanted, lest their Roots run too deep into the Earth, and by that Means the Plants may receive Prejudice by removing them. I have seen Pyramids and headed Plants of *Bays* introduced in Parterre Works, but I cannot advise it lest they should be injured by hard Weather, which often would be apt to change their Colour, and perhaps kill them. But if by our Skill and Industry

we

we h
Kind
or C
may
have
the C
are o
Defin
has n
Shelk
Hedge
Char
cour
cut o
I
Leav
into
ches
not

T
tica
the
able
the
of
gro
equ
Pla
nex
As
deli
qui
wh
tur
wo

we have been Fortunate enough to train up some of this Kind of *Tree* to handsome Plants, let them be put in Pots or Cafes, and housed in the Winter, that their Beauty may be preserv'd. The finest Trees of this Kind that I have ever seen, either in *England* or Abroad, are now in the Gardens of the *Royal Palace at Kensington*, which are of very great Value: However, if it should be the Desire of any one to propagate this Kind of *Plant*, who has not the Convenience of a *Green-House* or Place of Shelter for them in the Winter, we may plant them in *Hedges* or against *Walls*; and if severe Frosts should by Chance discolour them, yet let not the Owner be discouraged; let the *Plants* so injured have their top *Branch* cut off in the Spring, and they will shoot out a-fresh.

IN *Holland* and *Flanders* I have seen the *Bay* with its *Leaves* finely variegated. Some *Plants* of it I have brought into *England*, which I have increas'd by ingrafting *Bran-ches* of them upon our common *Bay*. But I yet have not ventur'd it to stand abroad in the Winter.

SECT. V.

Of the BOX-TREE.

THE *Box-Tree* is very easily propagated, either by *Slips*, *Layers*, or *Seeds*. It is a *Plant* very valuable for its *Wood*, so much used for Mathematical Instruments, Combs, and such like Works, and the continu'd *Verdure* of its *Leaves* makes it an acceptable *Plant* to the Gardener. *Box-Hill* in *Surry* shews us the Excellencies of this *Plant*, as well from the Profit of its *Wood*, as the pleasing Shade of the *Box-Trees* growing upon it, which are some of them so large as to equal almost any other Sort of *Timber-Trees*. This *Plant* will make delightful *Hedges* in Gardens, and is, next to the *Yew*, the best *Tonsile Tree* for the *Parterre*. As it is a slow Grower, and produces a small Leaf, it delights in Chalky Mountains, where it will grow much quicker than it does in our Gardens. It is on those Hills where it should be planted therefore for Profit, tho' a natural Soil in a Garden is rather to be preferr'd, if we would keep it in Shape and within Bounds: The best Time

Time of the Year to make *Layers* or *Slips* of it is in *September*, and the *Seeds* of it may be either sown so soon as they are full ripe, or laid in *Sand* during the Winter, to be sown the Spring following : The *Seeds* of this Tree, like those of the *Holly*, may be forwarded in their *Growth* by the *Bran* and *Water*.

BESIDE the common Sort I have been speaking of, I have seen one with variegated *Leaves* which makes a very beautiful *Plant* for the *Parterre*, if it be kept in good Order.

THE *Dwarf* or *Dutch-Box* is of extraordinary Use for Edging or Bordering of Flower-Beds, or for the making of Scrawl-Work ; it will resist the most severe Weather, and remain good without renewing for above twenty Years ; it is much cheaper than Border-Boards, and far more beautiful ; but above all, it is to be admired on account of the Profit it will bring to the Owner when he shall be inclined to sell it or transplant it. This Sort of *Box*, if it be earthed up every Year, may in four or five Years after Planting be taken up and parted or slip'd, and be made to plant about four times as much Ground as that which it stood upon. I cannot pretend to set down the Price of it, since there has not been any certain Standard for its Value. I have bought some at 6*d.* per Yard, and at other Times have paid 8*d.* and a Shilling for the same Measure, but then we must suppose that the more we pay for it, so much the more Ground it ought to plant when it comes to be slip'd or parted.

SECT. VI.

Of the LAUREL.

THE *Laurel* has been used for *Hedges*, and sometimes trained up into headed *Plants*, but is of that Quickness in its *Growth* that I cannot recommend it as a proper Companion for the other *Ever-Greens* before-mentioned. I believe, with Mr. *Evelyn*, that this Sort of *Plant* would do much better to be cultivated as a Standard in *Walks* or *Avenues*, where it may have full Liberty to range without danger of the Knife. I am of Opinion this Tree will grow to a very large Size,

Size, especially when it has been grafted or budded upon *Black-Cherry Stalks*; which Experiment I have seen try'd by my curious Friend, *Robert Balle*, Esq; and has answer'd very well to the Design, and keeps its Leaves all Winter; from whence we may believe that it is not any particular Quality in the Juices of a *Plant* which causes it to be either ever Green, or otherwise, but that a continual Verdure rather proceeds from certain Vessels which convey the Juices from the *Trunk* into the *Leaves* of Trees, which are more in Number, and much stronger and tougher in *Ever-Greens*, than in such *Plants* as shed their *Leaves* in Winter. But this Case I shall treat of more amply in another Place.

THE *Laurel* may be propagated after the same Manner as I have directed for the Raising of the *Bay*, either from the *Berries*, or by *Layers* or *Cuttings*; it loves Shade, and will thrive in (almost) every Soil; it resists the Weather, and has that Bitterness in its *Leaves* that Cattle will not readily annoy it. But Wild-Fowl, such as *Pheasants*, *Partridges*, *Wood-cocks*, *Black-birds*, and the like, delight to shelter themselves under its Cover in hard Weather, therefore it might be planted in Parks or other Places of the like Nature, for the Increase and preservation of Game-Fowl.

SECT. VII.

Of the *PHILLYREA*.

THE Nursery-Men know five Sorts of *Phillyrea* by the following Names, the *Plain Phillyrea*, the *bleach'd Kind*, the *true Phillyrea*, the *Dutch Silver'd-leav'd Sort*, and the *Gilded Dutch Kind*. The first or most common of these may be propagated from the *Berries*, order'd like those of the *Holly*, or it may with the other Sorts be raised by *Layers*, which presently take Root; it delights in a natural light Soil, without any Mixture of rich Compost. Both this and the *bleach'd-leav'd Phillyrea* are very quick Growers, and make tolerable *Hedges* if they be well supported with strong Rails or Stakes, but without such Helps are not capable of resisting the Strength of the Winds; but the true *Phillyrea*

rea is better able to defend it self against the Insults of Storms, and its slow *Growth* makes it a fit Companion for the best *Ever-Greens* in the *Parterre*. I have seen *Pyramid* and headed *Plants* of this Sort which have equall'd in their Beauty any other of the *Garden-Race*, but the *plain* and *bloach'd* Leav'd Kinds are with great Difficulty kept in any Form. The *Dutch Silver-leav'd* and *gilded* Sorts are valuable for the smallness and elegant *Variegations* of their *Leaves*, they may be easily trained into any Shape, but cannot abide the Frost, therefore are not so properly the Inhabitants of open Gardens, as of Places of Shelter. The Time of laying the tender Branches of these and all other *Phillyrea's* into the Earth, is in *September*, by which Means we may greatly increase this Kind of Plant.

SECT. VIII.

Of the *ALATERNUS*.

THE *Alaternus* of the Gardeners differs from what they call *Phillyrea*, by being narrower Leav'd; and from the *Privet*, by having Notches on the Edges of its *Leaves*. Mr. *Evelyn* gives us one very material Remark of it, viz. that the Seeds of the *Alaternus* come up in a Month's Time after Sowing; he directs, it should be planted out, at two Years *Growth*, either for *Hedges*, or to be train'd up into figured *Plants*; the sudden *Germination* of the *Seeds* shews it not to be a *Phillyrea*, whose *Berries* lie a long Time in the Earth before they sprout; it may be increas'd also from *Layers*, treated like those of the *Phillyrea*, and delights in the same Kind of *Soil*.

SECT. IX.

Of the *JUNIPER*.

OF the *Juniper* we have two Kinds known to our Gardeners, the *Common*, and what they call the *Swedish Juniper*; both of them resist the most severe Frost, and for that Reason, as well as for their beautiful *Green*, should have their Place among other *Ever-*

Ever-
Leaves
them
ing the
be said
barren
the co
Berries
withou
nure:
may re
transpl
Weeds
forty
mentio
eleven

T
ken N
any on
of its
produc
like B
ter, a
Perfec
which
that I
train'd
Scarlet
Thing
this T
ment
beauti
or from
full rip
are sub
P A

Ever-greens of the *Parterre*. The Smallness of their *Leaves* is such, that an ingenious Workman may train them up into any Shape, and by often Cutting or Sheering them, they will be so close, that no other *Plant* can be said to exceed them in that Respect. It delights in barren *Soil*, such as *Heaths* or *Downs*, where I have seen the common Kind grow freely and plentifully. The *Berries* should be sown about *March*, in light Ground without watering them, or giving them any rich *Manure*: They come up in two Months after Sowing, and may remain two Years in the *Seed-bed*, before they are transplanted, taking great Care to keep them free from Weeds. I remember to have heard of a *Juniper-Tree* above forty Foot high; and I think Mr. *Evelyn* has somewhere mention'd one of that Sort which made an *Arbour* of eleven Foot high in ten Years Time.

SECT. X.

Of the *PIRACANTHA*.

THE *Piracantha* has many Perfections which are not found in other *Ever-greens* of the *Parterre*, and yet to my great Wonder, is very little taken Notice of about *London*, insomuch that I know not any one Nursery where it is cultivated; besides the Beauty of its *Leaves*, the Bunches of white Blossoms which it produces in *May*, are very Ornamental, and its Coral-like Beads, which hang upon it in Clusters all the Winter, affords us a most delightful Prospect; to all these Perfections we may add the Strength of its *Thorns*, which makes it one of the most useful *Plants* for Hedges, that I know of. I have seen some *Plants* of this Kind, train'd into *Balls* and *Pyramids* almost cover'd with the Scarlet *Berries*, when Nature seem'd to rest in other Things; and indeed was I to make a Winter Garden, this Tree would be no small Contributor to the Ornament of it; but let us now proceed to the *Culture* of this beautiful *Plant*: It may be rais'd either from the *Berries*, or from *Layers* or *Cuttings*. The *Berries* when they are full ripe, should be order'd like those of the *Holly*, and are subject to lie as long in the Earth, but I would advise

that they be given to Fowls to eat, that by passing through their Bodies, they may the sooner come up, and be better prepared to *vegetate*. In *Devonshire*, where this Plant abounds, it has been observ'd that such Fowl as feed upon the *Berries*, scatter them over the Country, where they *vegetate* exceedingly, but are very difficult to transplant, having few *Fibres* at their Roots; therefore when they are come up and have stood a Year or two at most, they should be planted out where they are to remain. In the Removal of this, and other Trees of the like Nature, we must be careful to keep the Roots from drying before they are put again into the Ground. If we would raise these *Plants* from *Layers*, lay down only such *Branches* as are tender and of the last Shoot, which Rule must be observ'd in the laying of all *Evergreens* whatever; for the more woody *Branches* will not strike Root by any Means. About *May* or *June*, we may plant *Cuttings* of the fresh tender *Twigs* in Pots of fine Earth, watering them frequently, and keeping them from the Sun 'till the following Winter, at which time a warm Exposure will be helpful to them, and prepare them to make a strong Shoot in the Spring. *Plants* raised in this Manner may be transplanted with greater Ease and less Hazard, than those raised from *Seeds* or by *Layers*, as I have experienced. The *Piracantha* delights in a dry Gravelly Soil, and will grow to be a large Tree, if rightly manag'd and kept from Dung or other rich Manure which will destroy it.

SECT. XI.

Of the *I L E X*.

ALTHO' I have mention'd this *Plant* in the former Part of this Work to be a valuable Tree for Timber, yet I cannot well avoid in this Place to take Notice of the great Use which might be made of it in Gardens. I have seen *Pyramid Plants* of it near Thirty Foot high, and there are *Hedges* of it now growing in *England*, of above that Height, which have been sown but a few Years since. Such Shelter would be much more preferable than the *Dutch Elm* or *Horn-beam*

for the preserving of *Orange-Trees* from the Sun, and Blasts, and might be made use of to defend our Fruit Trees from the Blights which too frequently attend the North-East Winds of the Spring: See the *Culture* of this Tree in the *First Part*: The *Cork-Tree* must be propagated after the same Manner, and is much like it.

SECT. XII.

Of the *ARBUTUS* or *STRAWBERRY-TREE*.

THE *Arbutus*, altho' an *Exotick Plant*, thrives very well in our Climate; it is a most beautiful Tree, blossoming twice a Year, and has its *Fruit* ripe in the Winter, yet notwithstanding these Excellencies, it is little sought after, perhaps as it is a Stranger, and not supposed to be hardy enough to resist our *Frosts*. I have heard of it growing plentifully in *Ireland*, and have seen very large Trees of it in some Gardens about *London*. The *Plant* indeed is not so well disposed, to be train'd up in nice-shaped *Trees*, as many others, but it makes a most agreeable *Hedge*, and is very Ornamental in *Wilderness Works*. It loves a light Gravelly Soil, and may be raised either from the *Seeds* or *Layers*. The *Fruit*, (which to all Appearance, is a *Strawberry*, but rather tasting like the Pulp of a *wild Service*,) must be gather'd about *Christmas*, and laid to dry for a Month, and then bruise'd and mix'd with Sand, in order to be sown in Pots of light Earth, and cover'd about a quarter of an Inch with sifted *Mould*. This *Work* must be done in *March*. The gentle Heat of a *Hot Bed* will much help the Germination of the *Seeds*, which should be frequently sprinkled with Pond Water 'till they come up.

THE most tender Shoots of this *Tree* may be lay'd down about *September* in fine Earth, and will strike Root in a Year's Time, if they are kept moist by frequent Waterings, but will not be strong enough to transplant till the Spring following, and must then be kept in the Shade for two or three Months.

SECT. XIII.

Of the Italian GREEN-PRIVET.

THIS *Plant* was brought from *Italy*, by Mr. *Balle*, among other Curiosities of the like Nature; its *Leaves* are not unlike those of the *Olive*; among other Names given it by the *Italians*, it is call'd the *Olivetta*. This *Plant*, altho' it is a quick Grower, makes an admirable Hedge, if it be often clipp'd; and tho' it be a Foreigner, despises the Violence of our Frosts, and maintains its Verdure all the Winter: I have not yet seen the Flowers of it, but have had many of the *Berries*, which somewhat resemble the Fruit of the *Mirtle*. We must sow the *Berries* of this *Plant* in *March*, about an Inch deep in light Earth, watering them frequently 'till they come up, and transplant them from the Seed-Bed the second Year after sowing. I suppose a hot Gravelly Soil to be the most proper for it, having planted it in that Sort of Ground where it has made Shoots of four Foot long in one Summer.

Now beside the *Ever-greens* I have mention'd for *Hedges* and *figur'd Plants*, agreeable to *Parterre Works*, it may not be amiss to take Notice of such others, as I have seen propagated by the Curious for different Uses; the *Olive*, *Lentiscus* and the *Pistachio* may be planted against Walls expos'd to the South Sun, and will thrive very well. I have seen perfect Fruit of the *Olive* in the Gardens at *Cambden-House*, *Kensington*, and in many other Places near *London*; it is a *Plant* hardy enough to maintain its self in our *Climate* without any Shelter, and may be propagated by laying down the young *Branches* in the Earth about *March*.

THE *Lentiscus* is a *Plant* commonly kept in *Green-Houses*, but is sometimes planted against a warm Wall without Doors; it is rais'd from the *Berries*, which are brought from *Italy* and other Places in the *Mediterranean Sea*. The *Pistachio* likewise is a *Plant* which will thrive well enough in our *Climate*, and may be either rais'd from the *Nuts* or *Suckers*, managed as the other *Ever-greens* I have mention'd before. This last *Tree* is commonly

monly planted against a Wall, and in that Station I have seen it bear Fruit at the late Bishop of *London's* Gardens at *Fulham*; I have seen it also growing in the Wilderness belonging to the Earl of *Peterborough* at *Parson's-Green*, where (altho' it bore Fruit plentifully) the Name of it was not known 'till last Year.

THE several Kinds of *Firrs* are likewise Ornamental in Wilderness Works, and are beneficial in Sylvan Plantations; there are many Kinds of them which are all raised from Seeds sown in *March*; they grow freely in any Ground, and should have their *collateral Buds* broke off while they are young and tender, by which Means the *Timber* will be free from *Knots*.

IN the next Place, the *Cypress*, *Lignum Vitæ*, and *Cedar of Libanus*, with others of the like Nature, may be propagated as the former for Wilderness Works.

AND now, as I have set down the Culture of all Sorts of *Ever-greens* which the Curious may desire to propagate for *Parterre* and *Wilderness Works*, I shall conclude this CHAPTER with a Word or two concerning *Grass Turfs* for *Verges* or *figured Works* in Gardens, which I think cannot be so properly introduced in any other Part of my Design as in this Place, seeing how much Works in Grass contribute from their beautiful *Ever-green* to embellish a *Parterre*. The best Times for laying of Grass-Plats are the Months *March* and *September*; and the best *Turfs* for that Use are such as are taken from the most barren Lands, as *Heaths* and *Commons*, where the *Sword* or *Blade* of the Grass is narrow and short. To lay a Grass Walk, let the Ground be well dug and levelled; then after it is trodden down, or beaten, and raked by a nice Hand, lay down your *Turfs* close together, and role them with a *Wooden Roler*, for five or six Mornings successively, 'till they are well press'd, and the *Turfs* begin to strike Root; by this Method a Gentleman may quickly be Master of good *Grass Walks* or other *Grass Works*, and enjoy a continued Delight from them, especially if they lie moist, and are somewhat shelter'd from the scorching Heat of the Sun, which is too apt to tarnish them. I shall now proceed to speak of such Flowering Trees and Shrubs, as are proper for the adorning of Gardens.

C H A P. III.

Of FLOWERING-TREES and SHRUBS, their
Culture and Use in Gardens.

AS I esteem *Flowering-Trees* and *Shrubs* to be the next after *Ever-greens*, which a curious Person will be desirous of propagating in his Garden; so in the Culture of them, I shall be no less particular than I have been in the foregoing CHAPTER of the Management of *Ever-greens*.

I suppose no one is ignorant that the greatest Part of these *Flowering-Trees* and *Shrubs*, which are at this Time so well known to our Gardeners, are *Exotics*, and it is well worth our Enquiry what Climes they were at first brought from, that for the better Embellishment of our Gardens, we may still seek after many other Varieties of the like Kinds, in those Countries whose natural State of Weather most nearly resembles the Properties of our Climate.

I find that Plants of *Virginia*, and even those of the *North Parts* of *Carolina*, will bear our Frosts, if they are managed with Judgment. The *Tulip-Tree*, for Instance, which flourishes so well in the Earl of *Peterborough's* Wilderness at *Parson's-Green*, is a *Virginia Plant*, and yet finds no difference between the Degrees of 38 and 52. In its native Country, it is an Inhabitant of the Woods, and in my Lord *Peterborough's* Garden it flourishes in a Wilderness, but I have known it planted in a much warmer, and more open Exposure, and it has perish'd; this should be always consider'd by the Gardener, to plant every *Tree* in a Wood which is natural to a Wood, and upon a Plain that which is the Native of a Plain. I might here set down the most proper Method for bringing over such curious *Plants* as grow in Foreign Countries into *England*, and might give some Rules for the Naturalizing them when they are with us; but as I have now by me some Papers purely relating to the Culture and Management of *Exotic Plants*, which I

am

am perswaded to make publick, I must crave my Reader's Patience 'till I present him with all that I know relating to that Subject, and at present only give him the necessary Direction for the Management of those *Foreigners* which are already naturalized to our Country.

THE *Plants* which will make the Contents of this Chapter, as the most worthy our Care, are *Jasmines*, *Honey-Suckles*, *Lilac*, *Syringa*, *Roses*, *Guilder-Rose*, *Brooms*, *Liburnum*, *Mezereon*, *Spiraea's*, *Arbor-Juda*, *Passion-Tree*, *Senna's* and *Tulip Tree*.

SECT. I.

Of the JASMINE.

OF the *Jasmine* there are three Sorts, which bear our Frosts, known to the Gardeners, and distinguish'd among them by the Names of the common *White Jasmine*, the *Yellow Jasmine*, and the *Persian Jasmine*. The first of these is capable of resisting the most severe Weather, it is generous in its Growth, shooting sometimes more than six Foot in a Summer. It produceth its white fragrant Flowers about *June*, and continues Blossoming 'till *September*; it is propagated from *Layers* or *Cuttings* with great Facility, and will grow in any *Soil*. The Time of *Laying* the young *Shoots* of this *Plant* into the Earth is about *September*, and at that Time we may likewise plant *Cuttings* of it about a Foot long, always taking Care that two *Knots* be under Ground, for it is just below the *Buds* that the *Roots* spring forth, i. e. from the Place where the *Leaf* of that Summer had join'd it self to the *Branch*. This *Plant* is so delightful that I think no curious Person can be without a large Plantation of it, either to plant against *Walls* or *Trees*, or else to train up into *beaded Plants*. I have seen this Sort of *Jasmine* planted in *Hedges* of *Dutch Elm* and *Hornbeam*, curiously intermixing it self with them, and yielding a most agreeable Entertainment to the Owner, by Means of its pretty *Blossoms* and their delightful Odour. When it is train'd into *beaded Plants*, and kept in *Pots*, it serves to adorn the *Chimnies* in the Summer Months, and it is also of Use to engraft the *Spanish White*

Jasmine

Jasmine upon, or those of its own Kind with *variegated Leaves*.

THE *Yellow Jasmine* has its Leaves more shining than the former, and its Flowers not much unlike those of the *Yellow-Indian Jasmine*. I have seen but few Plants of it about *London*, altho' its Beauty is, in my Opinion, surpassing the former; it is hardy enough to endure the most severe Weather of our Clime, and may be propagated from Layers, like the other. I remember to have seen it prosper well against a *Wall* in a light sandy Soil, and I am apt to believe the *Indian Jasmine* might be grafted upon it, as the Smell of both their Flowers are so nearly the same; which seems to inform us, that the Parts and Juices of one and the other are alike, for if a Flower contains the most refin'd Juices of a Plant, and if it is allow'd that the Odour of that Flower proceeds from certain Vapours, arising from the Juices contain'd in it, then it seems reasonable to believe, that when we meet with Flowers of different Plants, which touch the Organs of Smelling in the same Manner, the Juices of each of them must then be alike, and the Vessels and Glands through which they have pass'd from the Root, must be nearly the same, either in Figure or Quality, and sometimes in both.

THE *Persian Jasmine* bears Flowers of a Purple Colour, but seldom makes a large Plant, it will bear the Weather, and make a pretty show in Wilderness Works, among other flowering Shrubs; it may be raised from Layers or Suckers, and loves a light Soil.

SECT. II.

Of the WOOD-BIND or HONEY-SUCKLE.

THE Gardeners cultivate several Kinds of *Honey-Suckles*, distinguish'd among them by the Names of the *Forward Blowers*, *Later Blowers*, *Scarlet Flower'd* and *Ever-green Honey-Suckle*; these are all of them *twining Plants*, and are raised from Layers or Cuttings, order'd like those of the *Jasmine* in *September* or *October*; they love Shade, and are the Natural Inhabitants of Woods, where the Neighbouring Trees serve them for their

their Support; some or other of them shew us their *Blossoms*, and perfume the Air with their fragrant O-dours, throughout the whole Summer, and therefore it would be needless for me to advise a Gardener to provide himself with every Variety of it, which I have mention'd. The *Flowers* are in themselves Beautiful, and as the *Plant* is a quick Grower, let it be planted about *Trees* in A-venues, to intermix its *Blossoms* among the *Branches* of such as the *Elm*, *Oak*, and the like. Now altho' the *Honey-Suckle* is a *twining Plant* like the *Jasmine*, yet it may be train'd up into a *Standard*, and has an admirable Effect, as a *beaded Plant*, in the most remote Parts of *Parterre Works*; for to plant it among *Ever-greens*, in or about the Center of such a Garden, would wound the Prospect for many Months of the Year, when it was va-cant of *Leaves*.

If I may be allow'd to direct the Fancy of other Peo-ple, I would advise that every Sort of Flowering *Shrub* should be trained into *beaded Plants*, and planted in Gar-den Pots, that when they are in *Flower* they may be set in the Borders between the *Ever-greens*, and removed as soon as their *Blossoms* is over, to make Room for others.

SECT. III.

Of the LILAC.

OF the *Lilac* there are two Sorts, commonly known to the Gardeners by that Name, viz. the *Blue*, and the *White*. The Botanists indeed call the *Lilac* by the Name of *Syringa* or *Pipe-Tree*, but the Gardeners give the Name of *Syringa* to another Plant; therefore as my Design here is chiefly dedicated to the Use of Gardeners, I shall call every Plant by the Name they know them by, and at the End of my Work endeavour to reconcile the *Botanist* with the *Gardener*, by an Index of Names in *Latin*, *English*, and o-ther Languages now in Use. The *Lilac* then is a *Plant* which grows to a pretty large *Tree*, bearing its Bunches of *Blue*, or rather *Purple Blossoms*, like Plumes of Fea-thers, in *May*; I know not any Sight more agreeable than this *Tree* when it is full of *Flowers*, and altho' it is very

very common, is well worth our propagating. Small Walks of these Trees are very pleasant, and they are no less Ornamental in the Quarters of *Wilderness Works*, especially if the *White* flowering Kind be judiciously intermix'd with them. They may be raised by Laying down the young Branches in *March*, or by taking off the *Suckers*, and planting them in a light Soil in the same Month, or about *September*.

SECT. IV.

Of the SYRINGA.

THE *Syringa* has two Qualities which were taken Notice of by that Learned and Curious Botanist the late *Bishop of London*, viz. That the Leaves tasted like *Green Cucumbers*, and the Blossoms had the Odour of *Orange-flowers*; this Shrub is propagated as well for *Wilderness Quarters* as for headed Plants, and is often planted in Pots to adorn Chimnies in the Summer. They produce their Bunches of fragrant white Blossoms in *May*, and continue Blowing for six Weeks. I have not yet try'd to raise them from Seeds, nor indeed would it be worth while, seeing how apt the Root is to put out *Suckers*, which may with great Ease be taken off about *March* or *September*, and transplanted. The *Syringa* will grow almost any where, and if planted in a shady Place will shoot vigorously, but being much exposed to the Sun, will produce Flowers in greater Abundance.

SECT. V.

Of the ROSE-TREE and its Kinds.

WE have more Variety of *Roses* propagated by our Gardeners, than of any other Flowering Tree or Shrub; the Flowers are most delightful for their agreeable Odour and Beauty. I have seen one or other of them Blossoming for ten Months of the Year, without using any great Art to alter the natural Season of their Blowing. The Gardeners distinguish them by the following Names, first the *Cinnamon Rose*, which

PLANTING and GARDENING.

27

which is the most forward Blower ; the *Monthly Rose*, and the *Cluster Monthly Rose*, which if they happen to be planted against a warm Wall, will begin to blow about the latter End of *March*, or the Beginning of *April*, and continue to produce *Flowers* for almost three Months; and if after they are out of *Flower* they have the Tops of their Branches prun'd off, we may expect a second Crop of *Roses* from the same Trees in *Autumn*, which will continue their *Blossom* almost 'till *Chrifmas*, if the Weather be open. The next after these is the *Damask Rose*, which will begin its *Blossom* in *May*, and continue Flowering for above six Weeks. The *Rosamundi*, or *York* and *Lancaster Rose*, with the *White*, *Red*, and *Yellow Roses*, begin their *Blossom* somewhat later than the *Damask*: And last of all, the *Centifol*, or *Province Rose*, shews us its surprizing *Flowers*; but besides the several Sorts which I have here set down, there are many others which I have not yet seen. That curious and incomparable Patroness of Botany, the late Dutchess of *Beaufort*, has told me of 16 different Sorts, which her Grace cultivated in her Gardens at *Badminton*; but altho' the several Sorts of *Roses* differ in their Times of Flowering, yet are they all propagated after the same Manner; they love a strong holding Ground, and delight so much in moist Places, that they will even grow in Water; they may either be raised from *Layers* or *Suckers*; the first may be *Layn* down in *September*, and the *Suckers* may be taken from the old *Roots* in that Month, or about *March*, and transplanted immediately, before their *Roots*, which have but few *Fibres*, grow dry; but in case Necessity obliges us to keep them out of the Ground for some Time, lay their *Roots* in Water for Five or Six Hours before *Planting*. The *Rose-Tree* may be either Cultivated for the Quarters of Wilderness Works, to be planted there among other Flowering Shrubs, or trained up into *Standard Plants* for *Pots*.

SECT.

SECT. VI.

Of the *GUILDER-ROSE*.

THE *Guilder-Rose* bears its Bunches of *White Blossoms* (as big as a large Tennis-Ball) in *May*. The *Plant* seldom rises very high, or is capable of being kept in any regular Form, therefore is chiefly propagated for *Wildernesses* or other wild Places; it delights in a holding Land, and may be rais'd from *Suckers* taken from about the old *Root*, either in *March* or *September*.

SECT. VII.

Of the *SPANISH BROOM*.

THE *Spanish Broom*, altho' there is no great Beauty in its *Leaves*, yet the *Spikes* of *yellow Flowers* which it puts forth in *June* and *July*, makes it a *Plant* very desirable in our Gardens. It is an irregular *Plant*, by no Means to be brought into any Form by the Gardener. It may be planted in *Wilderness Works*, with other flowering *Shrubs*, among which it makes a good Show. We may raise it from *Seeds* sown in *March* in *Light Earth*, and also by laying down the tender Branches in the same Month, and cutting them at the Joynts after the Manner of *Carnation-Layers*; but this last Way is not so certain, and more troublesome than the raising of them from *Seeds*.

I cannot forbear taking Notice in this Place, of the common *English Broom*, and the *Furze-Bush*, as Plants well enough worthy our Care; the first to mix with the Shrubs of the Wilderness, and the other to be train'd into *Figur'd Plants*; these are both raised from *Seeds* sown in *March*, and will not bear transplanting after they are one Year old, without great Care. I have seen some *Plants* of the *Furze-Bush* cultivated in Gentlemen's Gardens, not any ways inferior to the Beauties of the most valuable *Ever-Greens*; it is tonfile as the *Yew*, and in my Opinion, exceeds it in one Respect, *i. e.* that it *Blossoms* in all Seasons of the Year; and was it not so common,

I doubt not but it would be more frequently planted in our Gardens than any other *Ever-green*. If it be kept well cut, it makes most beautiful and impenetrable Hedges.

SECT. VIII.

Of the *LABURNUM*.

THE *Laburnum* is an agreeable *Shrub*, or rather a little *Tree*. I have seen it above twenty Foot high, cover'd with its beautiful Strings of Yellow Flowers in *May* and *June*; and yielding Plenty of Fruit which ripens about *September*; this *Plant* resists our severest Frosts, and will grow in the most open Exposure, as well as under the Shade of large *Trees*; it is commonly planted among the other Flowering *Shrubs* of the *Wilderness*, and may be easily raised from the Seeds sown in *March*, and transplanted without Difficulty two Years after it is come up.

SECT. IX.

Of the *MEZEREON*.

THE Gardeners know two Sorts of *Mezereon*, viz. That with the *Red Flower*, and the *White flowering Sort*: The first is common enough in every Garden, but that with the *White Flower* is rare; they are both of them *Dwarfs*, seldom rising higher than three Foot, but have two Excellencies which make them more valuable than much taller *Trees*, their *Stalks* are cloathed with the *Flowers* in *January*, and the Air is then perfum'd with their delightful *Odours*; they remain a long while in *Blossom*, and are afterwards no less beautifully adorn'd with their *Fruits*. I know no other Way of propagating them, than by sowing the *Seeds* in *March*, if you can save them from the Devouring Birds which delight in them. I have eat some of the *Berries*, which were not unpleasant to the Taste, but about an Hour after I had swallow'd them, I found an extraordinary Heat in my Throat, which caus'd a violent burning Pain for above Twelve Hours. It would be well enough

enough worth our Enquiry, Whether the *Seeds* of all forward blowing *Plants* are not hot, in Proportion to those of the *Mezereon*? And, Whether their extraordinary Heat is not one Means of their early *Sprouting*? This *Plant* may well enough be introduced into the *Parterre*, as it is a slow Grower, or in *Wilderness Works*, for its delightful *Blossoms*, but chiefly into a *Winter Garden*. A Loamy Soil is most proper for it.

SECT. X.

Of the *SPIRÆA FRUTEX*.

THIS *Plant*, known to the Gardeners by the Name of *Spiræa Frutex*, blossoms about *August*, yielding Spikes of Flowers of a Pink Colour; the *Shrub* seldom exceeds 3 Foot in height, it is beautiful in its *Flower*, and is a *Plant* which should not be wanting in a Garden. It may be propagated from *Suckers* taken off in *March*, and planted in a light Soil.

SECT. XI.

Of the *ARBOR JUDÆ*.

THIS *Plant* is very common in the most Southern Parts of *Europe*, but I have receiv'd the *Seeds* of it also from *America*, (I think from *Virginia*) I have sown them in *March*, and rais'd great Numbers of them, and they are now common enough in most curious Gardens. This *Plant* will rise very high, even to equal a pretty large *Tree*, but is more frequently planted against a Wall with us, than in the open Ground. It bears its beautiful Rose-colour *Blossoms* in Clusters, about *March* or *April*, even before the *Leaves* are open'd. The late Learned Bishop of *London* eat of the *Flowers* in his Salads, and had a very large Plant of it against a Wall in his Garden. The *Plant* is hardy enough to resist our Frosts, and I doubt not but would do well in *Wilderness Works*, among other Flowering *Shrubs*. It loves a Loamy Soil.

SECT.

all
to
di-
ng?
the
cks,
inter

the
ust,
ur,
iti-
be
uc.

ern
of
) I
of
iri-
to
ted
It
a-
'd.
in
all
our
ess
my

T.

Passion Flower & Fruit



Tab. II.

Of
T
are A
of th
were
But a
of P
of or
tice
and
fion-
said
Eng
mon
they
one
to f
exp
whi
ties
the
We
it is
are
of
wh
vid
the
are
just
pla
Fig
Fo
to
Ed
It

SECT. XII.

Of the MARACOC, or PASSION-TREE.

THERE are several Sorts of *Passion-Trees*, some of them *Ever-greens*, others *Perdisols*, others dying to the Root every Winter, and others which are Annual *Plants*. I have reckon'd near Thirty Sorts of them at the Physick Garden at *Amsterdam*, where were the greatest Varieties of them that ever I have seen. But as it is not my Purpose here to particularize any Sort of *Plant* which is not capable of resisting the Weather of our Climate without Shelter, so I shall only take Notice of one Sort, commonly known to our Gardeners, and endeavour to rectify a Mistake concerning the *Passion-Tree*, which I believe many are possess'd of. It is said that we have at least two hardy Kinds of them in *England*, viz. The Fruit-bearing Kind, and the common Sort which bears no Fruit; but this is a Mistake, they are both one, but the Difference of Culture makes one Barren, the other Fruitful. But before I proceed to set down the Culture of this *Plant*, it may perhaps be expected I should say something of the *Flower* and *Fruit*, which are so remarkable, as well for their singular Beauties, as for the strange Account given of the *Flower* by the *Spanish Friars*, upon their first Discovery of it in the *West-Indies*. The *Flower* is about four Inches over when it is full blown; it has ten white *Petals*, within which are placed round about the Bottom of the *Stile* two Rows of *staminous-like* Threads, of a purple Colour; the *Stile*, which somewhat resembles the Pedestal of a Pillar, divides it self on the Top into Three Parts, which turn their Mouths towards the Bottom of the *Flower*; they are of the Colour of *Indigo*; besides these three *Tubes*, just below that Part of the *Stile* where they unite, are placed five *Stamina*, spreading themselves in a Star-like Figure, with yellow *Apices* on their Points. At the Foot-stalk of every *Flower* is a *Whirle*, or *Clasper*, and to that is join'd the *Leaf* of the *Plant*, deeply cut on the Edges. All which see in the *second Table* of this Part. It is called the *Passion-Tree*, for that, by the Contrivance

of

of the *Friars*, who in a counterfeit Figure of it, when it was first discover'd, added some things wanting in the Natural *Flower*, they made it, as it were, an Epitome of our Saviour's Passion; The Story perhaps as I have it, may not be unacceptable to my Reader. The ten *Petals*, say they, represent the ten *Apostles*, and at the same Time put the Question, that there were twelve, but they answer, That *Judas* had hang'd himself, and *Peter* had deny'd his Master: The *staminous-like* Parts, which spread themselves on the Flower, they liken to a *Glory*, and the small *Purple Threads* which stand round the Bottom of the *Stile* is a supposed *Crown of Thorns*: The *Stile* which is in the Middle of the Flowers, serves them for the *Pillar*, to which they say, the *Jews* bound those Malefactors, whom they scourged; and that they may not want any Part of the Story, they turn the *Claspper* into a *Cord*, and the *Leaf* into a *Hand*: The three Divisions on the Top of the *Stile*, they turn into three *Nails*, and taking off one of the five *Stamina's* with its *Apex*, calls it a Hammer, and the four others remaining makes a *Cross*; the three *Alabastries* at the Bottom of the Flower, are said to represent the three *Soldiers* who cast Lots; and the Time between the opening and shutting up of every *Flower* being just three Days, is enough to compleat the Story. Thus superstitious Persons, *semper sibi somnium fingunt*. The Old Herbarists have mention'd somewhat of this Story, but I found it mightily improv'd when I was at *Bruxelles*, even beyond what I have here mention'd.

BUT to proceed to the Culture of this *Plant*; that it may bear Fruit, we must plant it in very moist and cool Places where it may be continually fed with Water; this I had from the Curious Mr. *Adam Holt*, Gardener to the late Bishop of *London*, who shew'd me a Letter from the *West-Indies*, from whence I learnt it was an Inhabitant of *Swampy* Places. I have since that Time seen a Tree of this Sort with above three Hundred ripe Fruits upon it, at Mr. *Green's*, a very Curious Nursery-Man at *Brentford*, which was planted in Cow-Dung, and had from Time to Time the Place about it renewed with the same cooling Soil. The Fruit were shaped like Lemons,

Lemon
a beau
Pomgr
But th
seen,
a Gen
of Eng
them.
which
his Ki
Passion
gan to
FR
prope
of its
of my
Roots
the F
Fruit

W
in M
Cutti
they b
that l
long
were
tho'
above
spair
were
Reco
ly w
Plan

T
com
F

Lemons, and of the same Colour; they were fill'd with a beautiful red Pulp and Seeds, like the Fruit of the Pomgrenate, and were not disagreeable to the Taste. But the largest Fruit of this *Plant*, which I have yet seen, was sent some time since to the *Royal Society*, by a Gentleman, I think living somewhere in the *West* part of *England*, with an Account of his Method of raising them. He had a large *Tree* against one Side of his House, which happening to grow over a Drain that went from his Kitchen, and lay so shallow, that the *Roots* of his *Passion-Tree* found their Way into it, the *Tree* then began to produce Fruit.

FROM these Observations I was inform'd of the most proper Way to Cultivate this *Plant* for the Production of its Fruit, and the Directions I have given to several of my Friends to lay Plenty of Cow-Dung about the *Roots*, and even then to keep it frequently water'd in the Flowering Season, has been sufficient to shew them Fruit enough to satisfy their Curiosity.

WE may raise this *Plant* either from the Seeds sown in *March*, or by Layers in the same Month; and every Cutting of it about *May* or *June* will strike Root, if they be planted in fine Earth. It is so quick in its Growth, that I have seen some Branches of it about eighteen Foot long in one Summer, and is so hardy, that the most severe Frosts of our Climate will not destroy the *Roots*, altho' perhaps the *Plant*, to all Appearance, has perish'd above Ground. In the last great Frost I began to despair of two very large *Plants*, which stood abroad, and were even cut down to the Ground, without Hope of Recovery; but the *May* following, from the Fibres only which remain'd, there sprung up above Fifty small *Plants* from each Root.

SECT. XIII.

Of the *SENN A*.

THERE are several Kinds of *Senna*, distinguish'd by various Names among the Gardeners, but there are only two Sorts of them which are commonly known, and made use of, viz. the *Scopion Senna*,

Senna, and the *Bladder Senna*; the first is, in my Opinion, the most beautiful and deserving of our Care, the *Blossoms* shewing themselves as well in Autumn as in the Spring Season; they both make pretty *Shrubs* for Wilderness Works, and may be propagated for that Use, either by sowing the *Seeds* towards the latter End of *March*, or by *Laying* down the tender *Twigs* in the Earth in *April* or *May*, which soon strike *Root*, and may be transplanted without Difficulty. They love a *Loamy Earth*, and grow well in the *Shade*.

SECT. XIV.

Of the TULIP-TREE.

I Have already said something of this *Tree* at the Beginning of this Chapter, especially concerning that now growing at my Lord *Peterborough's*. It is a *Plant* of the Wood, and will not prosper Abroad in a more open Exposure, which I repeat, because it is seldom that our Gardeners regard that Nicety in the Culture of *New Plants*. The *Tulip Tree* should be set among such *Trees* as are design'd for Groves, it will rise to as great Height as any of our *Timber-Trees*. Its *Leaves* are somewhat like those of the *Maple*, and its *Flowers*, which begin to open in *July*, are only found at the Extremities of the Branches. They have some small Resemblance of a *Tulip*, but not enough, I think, to give the Name to the *Tree*. The *Petals* are of a Yellow Colour, somewhat variegated with Vermilion; the Fruit, which succeeds them, is like the *Cones* of the *Fir-Tree*, but does not come to Perfection in *England*; however as we frequently receive good *Seeds* of it from *Virginia* and *Carolina*, I shall give my Reader an experienc'd Method of raising them, for it is very difficult to propagate them from Layers. The Ingenious Mr. *Adam Holt*, having receiv'd some of the *Cones* of the *Tulip-Tree* from *Virginia*, sow'd the *Seeds* of them in Pots about *August*, and set them under Shelter all the Winter, the Spring following they came up without the Help of a Hot-bed. This Time of sowing the *Seeds* is necessary to be observ'd, for I have often try'd them in the Spring, but could

The F

Line for the lowest Flowers

Line for Middle blowing Flowers

C

B

The Flower of the Tulip Tree.

Tab. III.

Fig I.

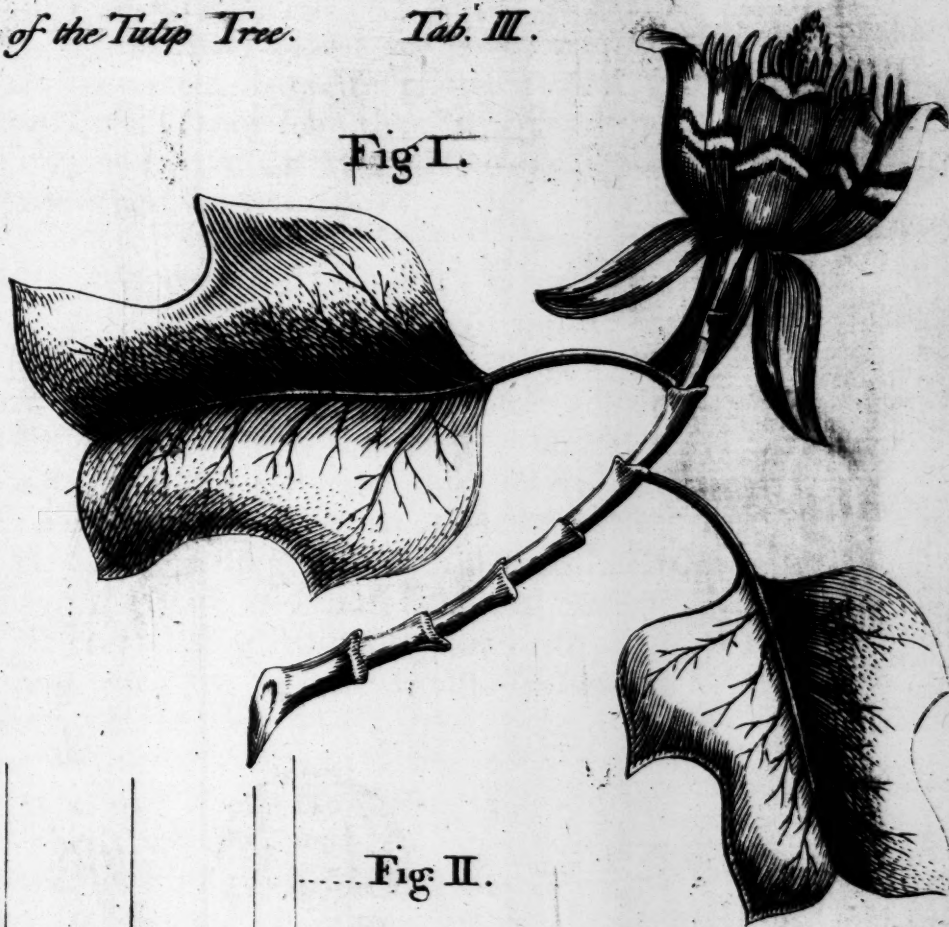
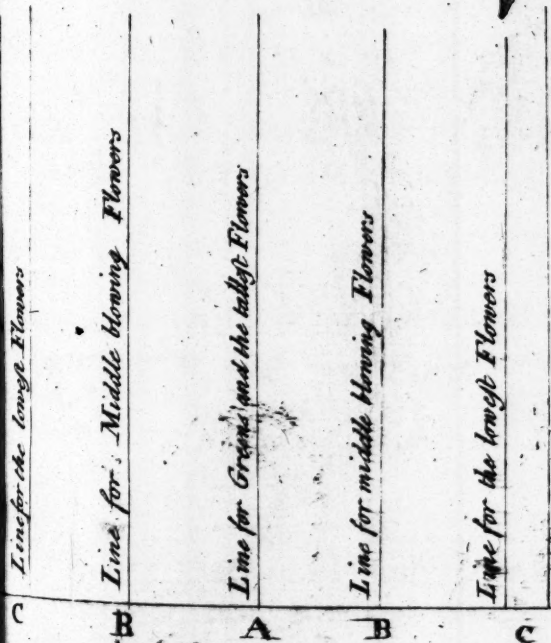


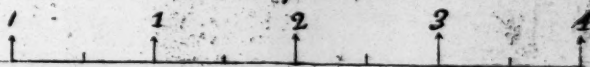
Fig II.



Edging

A Bed divided into Five Parts to be Planted after the manner directed in the last Chapter of this Part.

A Scale of Feet



could not raise them at that Season. The young *Plants* may be transplanted into single Pots at two Years Growth, and must have Shelter in the Winter for the first nine Years at least, 'till they have Strength enough to resist the Severity of our Frost; they may then be planted in the natural Ground, as I have directed, but rather in a sandy Soil than any other.

SECT. XV.

Of the P O M G R E N A T E.

WE know two Sorts of this *Plant*, viz. That with the single Flower, and the Double Blossom Kind; they are both hardy enough to withstand the Severities of our Winters, and are propagated by laying down the young Shoots in *March*. The Blossoms of each of them are of a most beautiful Scarlet Colour, the single ones setting frequently for Fruit, and sometimes ripening with us. I have seen some headed Plants of each Sort, but I rather advise them to be planted in Hedges or Wilderness Works; where they may be in less Danger of the *Knife* or *Sheers*. Some have made *Arbours* of them, which have been extremely pleasant. These Plants love a light Soil, and may be transplanted either in the Spring or Autumn Season.

SECT. XVI.

Of the ALTHEA-FRUTEX.

WE find two Sorts of this *Plant* (commonly) in the Gardens, differing from each other in the Colour of their Flowers, the one White, and the other Purple; they may be propagated from Layers in *September*, or Suckers taken from about the Roots at that time, and likewise from the Seeds sown in *March*, and are used chiefly in Wilderness Works. The Blossoms appear in *August* in great Numbers, and afford a delightful Prospect; they will grow in any Soil with little Trouble to the Gardener.

SECT. XVII.

Of the *Double-blossom'd Virgin's-bower*, the *Maxechild* or *Scarlet Jasmine*, *Perwinkle*, and *French Willow*.

THE first of these, *i. e.* the *Virgin's-bower*, may be raised from *Layers* in *September*, and some say from *Cuttings* likewise; the *Flowers* are of a *Violet Colour*, and appear in great *Numbers*, almost covering the *Plant*; it loves a *light Soil*, and as it is of a *twining Nature*, must be supported with *Stakes*. It may either be planted against a *Wall*, or set among the other *flowering Inhabitants* of the *Wilderness*.

THE *Maxechild*, or *Scarlet Jasmine*, is by some *Gardeners* call'd the *Trumpet Flower*; it is also a *twining Plant* like the former, and may be raised either from *Layers* or *Cuttings* in *September*; the *Flowers*, which it produces in *Abundance* about *May* or *June*, are rather of an *Orange Colour* than a *Scarlet*; it is commonly planted against *Walls*, tho' I am apt to believe it might maintain it self in *Wilderness Works*, or more open *Places*. This also loves a *light Soil*, and frequent *Waterings* in the *Summer Season*.

THERE are several *Sorts* of *Perwinkle* cultivated by the *Gardeners*; it is a *creeping Plant*, easily striking *Root*, if it be laid in the *Earth* about *March*, or will grow of *Cuttings* planted in *September*. Its pretty *Blue Flowers* makes an agreeable *Show* in the *Summer*; this *Plant* indeed hardly deserves the *Name* of a *Shrub*, but as it is not strictly of the *Herbaceous Race*, I take the *Liberty* to speak of it in this *Chapter*, and because, when it is ty'd up to *Stakes*, it may very well be reckon'd a fit *Companion* for *Flowering Shrubs*; this, with the rest, may be planted in *Wilderness Works*, and in *Pots* (for the *Ornament* of *Parterres*) to prevent the too great *Increase* of its *Suckers*, which would be apt to over-run the *Borders*. It delights in moist *Ground* and *Shade*.

THE *French Willow* is also one of the *Dwarfs* of this *Chapter*, and is rather a greater *Increase*r than the former, producing incredible *Numbers* of *Suckers* about the

the R
ther i
Wilde
but if
pretty
in Po
T
ering
given
in Ga
indee
which
Trees
I shal
of Fr
taking
ing Sh
den-P
blossom
may c
supply

Of



there
Bord
as ne
recon
able
may
comm
midst
of Fl

the *Root*, which may be taken off and transplanted, either in the *Spring* or *Autumn* Seasons; if we plant it in *Wilderness Works*, it will soon over-spread the Ground, but if it be desir'd in the *Parterre* for the Sake of its pretty Pink-colour *Flowers*, the *Roots* must be confin'd in *Pots*.

THUS I think I have mentioned every Sort of *Flowering Shrub* and *Tree* known to the Gardeners, and have given such Directions for their *Culture* and Management in Gardens, as I have my self experienced. I might indeed have added to them the *Berberry* and *Almond*, which produce such agreeable *Flowers*; but as those *Trees* are chiefly celebrated for the *Fruits* they bear, so I shall not take any further Notice of them 'till I speak of *Fruits* in general. I shall conclude this Chapter with taking Notice once more that every one of the *Flowering Shrubs* I have mentioned, may be cultivated in *Garden-Pots*; and so placed from Time to Time, as they blossom, in the Borders; by which Method a Gardener may change the Face of his *Parterre* every Week, and supply it constantly with fresh Beauties.

CHAP. IV.

Of PERENNIAL FLOWERS, the tallest *Blowers*.



Intend in this Chapter to speak of such *Flowers* as remain for many Years in the Ground, *Growing*, *Blossoming*, and *Increasing*; and as they are most of them such as will rise to a considerable Height, and therefore the most proper to be planted in the Middle of Borders, and chiefly in large Gardens, I shall set down, as near as I can remember, their several Heights, and recommend that they be planted in Places proportionable to their several Altitudes, that if it is possible, one may not find such intolerable Mistakes as are frequently committed in many Places, of planting Dwarfs in the midst of a Border, and some of the most Gigantick Kinds of *Flowers* for *Edgings*; but that in the Planting a Bor-

der or Bed of *Flowers*, we may judiciously mix the several Sorts, so as to have not only some of them in *blof- som* every Month of the Year, but that they may be so disposed as to appear gradually one above the other, and add Beauty to each other by their Variety of Colours; for which End I shall add a Figure of a Bed of Earth four Foot wide, divided in the Manner I propose, and set down the proper *Flowers* allotted for each Division of it, when I have mentioned the several Sorts, and their Culture.

SECT. I.

Of the HOLYHOCKS.

THIS Plant, as it is always rais'd from *Seeds*, so are the *Flowers* commonly different from each other. I have seen about ten several Sorts of them in one Garden, which if the System of the Generation of Plants be true, may happen from accidental Coupling of one with the other; their *Flowers* are commonly double, and so cannot perhaps be very easily impregnated with other *Farina* than their own, otherwise we might have had many more Varieties of them; however as they are, they neither want Beauty, nor Stature, seldom bearing their Flower Stems less than six Foot high from the Ground, which are commonly garnish'd with their Rose-like *Blossoms* above half their Height. Their *Seeds* are sown in *March* in the natural Earth; and tho' they do not lie long in the Ground before they come up, yet they produce no *Flowers* 'till the second Year. They may be transplanted about *September* or *March*, and will begin to Flower in *July* or *August*; they require a rich Earth, and frequent Waterings in the Summer, to make them large. These remain good several Years, and may, for their Duration as well as their Magnitude, take Place among the Flowering Shrubs in Wilderness Works, or be planted in Lines in Avenues of Trees, where Cattle cannot come to destroy them; sometimes in the most remote or open Parts of large Gardens, where their *Red*, *White*, *Purple*, or *Black* Flowers afford a beautiful Prospect. They die to the Ground every Winter, and shoot
out

out again the following Spring: They are also increas'd by parting their Roots in *March*, but the Plants propagated that Way, are not so strong to Flower as the Seedlings.

SECT. II.

Of the PERENNIAL SUN-FLOWER.

THIS *Plant* blossoms about the same time with the former, and will bear its Flower Stems near six Foot high, if it be encouraged with rich Earth, and well water'd in the Summer Months. The Yellow Flowers which it produces resembling so many Stars, are very delightful, but are not so large as those of the *Annual Kind*. It may be propagated from *Seed* sown in *March*, or *Slips* of the *Root* taken off at that time, and transplanted. The Summer *Shoots* of this *Plant*, like those of the former, always perish at the Approach of Winter, and are succeeded by others in the following Spring. It will grow in the Shade and almost any Soil, and is even capable of resisting the Smoak of *London*; where it is often cultivated in Pots. It may be planted as a Companion with the *Hollyhock*.

SECT. III.

Of the ASTERS or STARWORTS.

THE curious Botanists reckon about twenty Sorts of *Starworts*, and I think I have seen the Figures of about fifteen different Kinds of them. Their several Names and Descriptions would be tedious to my Reader: And since they are all propagated after the same Manner, the mentioning only of two Sorts, which I esteem to be preferable to the rest, may suffice for the Instruction of any Planter.

THAT Sort which is the tallest of the Two which I shall recommend, is known to the Gardeners by the Name of the *October Flower*, it bears its Purple Flowers about *October*, upon Stalks of about four Foot from the Ground, and is not inferiour in its Beauty to any Flower of the Spring. I cannot forbear taking Notice in this

Place, that the Flowers of the *Autumn* Season are inclining to the darker Degrees of Colour; this and other *Asters*, which blow late, produce Purple Blossoms, the *Saffron Crocus* has Purple Flowers, and the *Autumn Cyclamen* is tending to that Colour; *Stock-July-Flowers*, which blossom about the End of the Year, are all inclining to Purple; and the *Colchicums* likewise, which are *Autumn*-blowing Flowers, are stain'd with the same Colour. I think it would be well worth the Enquiry of the Curious, whether this Purple which reigns in the *Autumn* among Flowers, does not proceed from the Quality of the Earth at that time, whose purest Juices are then exhausted. But to return to the Culture of this *Aster* or *October-Flower*, it is so apt to increase in its Roots, that without it be confin'd in Pots, either as I have directed for the foregoing Plants, or as a most Curious and Learned Gentleman in the Art of Gardening, *Samuel Reynardson*, Esq; of *Hillingdon*, has been used to plant it (in Pots without Bottoms) it will quickly overrun the Ground; every *Slip* taken from the Root in *March* will grow in any Soil or Exposure, and make a good Show that Year. It is a fit Companion for the tallest Flowers.

THE *Italian Starwort* is the other Sort which I would recommend to the Gardener, it produces its Purple Flowers in *August* and *September* upon Stalks of about two Foot high, this may be managed like the former; but as it is of a lower Stature, should be planted in lesser Gardens, and smaller Works than the other.

SECT. IV.

Of the Everlasting P E A.

THIS Plant is likewise *Perennial*, and may very well be placed among the tallest Plants; it is raised from Seeds sown in *March*, but does not blossom 'till the second Year after sowing. The Flowers which are of a *Peach-bloom* Colour continue blowing for above two Months. Doctor *Grew* tells us, that the Blossoms of this Plant, if they are steep'd some time in Spirits of Wine will produce a fine liquid Blue Colour,

equal

equal to that of *Ultra Marine*. The Plant will hardly bear Transplanting, without great Care to put it immediately in the Earth; the proper Season for it is *March*, or as soon as the *Haulm* is wither'd. As it is *Carot-rooted* it delights in sandy Soil, and should be planted either near a Tree or some Hedge where it may have Support; it will grow about eight Foot high, if it be tied to a Stake,

SECT. V.

Of the Campanula Piramidalis and Canterbury Bells.

OF the *Campanula Piramidalis* there are two sorts, one bearing *Blue*, the other *White* Flowers, upon Stalks which are sometimes near six Foot high. Both these Kinds have been chiefly cultivated in Pots for the adorning of Chimneys in the Summer Months, but they will grow very well in the natural Ground, if the Slips about the Roots are parted in *March*. They delight in sandy Soil, and are very proper Ornaments for the middle Row of Flowers in large Borders; they blossom in *July* and *August*.

THE *Canterbury-Bells* have Blossoms of a deeper *Blue* than those of the *Campanula Piramidalis*; the Flower-stems are commonly about three Foot high, so that this Plant is proper for the Middle of Borders in large Gardens; it is raised from Seeds sown in *March*, but does not blossom 'till the second Year after sowing; the time of removing the seedling Plants is either in *August*, or the *March* after they are come up.

SECT. VI.

Of the PRIMROSE-TREE.

THE *Primrose-Tree*, so call'd by the Gardeners because the Blossoms are somewhat like those of the common *Primrose* in Smell, Shape, and Colour; the Flower-stems will sometimes rise near three Foot high, and produces Flowers in *June*; the Seed is ripe about *August*, and must be sown in the Natural Ground in *March*, towards the latter End of the Month.

The

The seedling Plants will not blossom 'till the second Year, therefore should be sown in a Nursery, and the young Plants removed to proper Places the *August* after they are come up. This Plant also is proper for the Middle of Borders in large Gardens, and will grow in any Soil.

SECT. VII.

Of the LILLYS and MARTAGONS.

ALTHO' the *Lilly* and *Martagon* are properly bulbous rooted Plants, yet for their extraordinary Stature above all other Bulbs that I know, I shall place 'em among the Giants of this Chapter; and besides, as their Roots flourish the better for remaining constantly in the Ground, I think they may well enough take Place among the Plants I am now describing. The *Lillys* are what I shall first examine, of which there are many Kinds, viz. the *Common White Lilly*, the *Double-Blossom'd White Lilly*, the *Strip'd Lilly*, the *Orange Lilly*, and that Kind which produces *Bulbs* upon its Flower Stalks. These *Lillys* are all of them propagated after the same Manner, by parting their *Roots* when the *Leaves* are vacant about *July* or in *August*; they all of them blow about the same Time, in *May* and *June*, upon Flower Stems of three Foot high, or thereabouts, and equally delight in open *sandy Soil*; they are very proper Plants for the Middle of Borders in great Gardens, or to be planted under Hedges in long Walks, except the *strip'd White Lilly*, which is yet Rariety enough to deserve a Place in the nicest, and even the smallest Garden: But of these separately.

FIRST, the *White Lillys*, whether with single or double Flowers, have no other Difference than in the Make of their Blossoms; that with *single Flowers* is in my Opinion preferable to the other which is call'd the *Double Blossom*; the *first* has large perfect Flowers in good Quantities, and the *other* mis-shapen Blossoms without any other Desert than their Novelty. What is call'd the *strip'd White Lilly*, differs only from the Common sort with single Blossoms, in having its *Leaves* curiously

Edged

Edged with a *Cream Colour* ; it is so beautiful in the Winter, that few of the gayest Plants exceed it.

THE *Orange-Lilly*, so call'd from the Colour of its Flowers, is very ornamental in Gardens, and a very proper Companion for the *White Lilly*, and makes an agreeable Mixture with it ; and the other, which bears its Bulbs on the Flower-stalks, is very desirable for its beautiful Red Flowers, as well as for its singular Way of producing its Increase. It would be well worth our Enquiry, from whence these Bulbs have their Rise, whether they do not proceed from *Female Blossoms* impregnated by the *farina* of the *Flowers* ; I own it is a Case which I have not yet duly consider'd, but I hope I shall be able to give a better Account of it, when I have examin'd it more strictly ; and I could wish every curious Reader would communicate his Observations upon Cases of this Kind, directed for me at Mr. *Mears's* the Publisher of these Papers, that by a mutual Correspondence of curious Men, many Mysteries in Planting might perhaps be discover'd and brought to Light for the Profit and Pleasure of Mankind, which is the chief End I aim at in these Papers.

THE *Martagons*, called by some Gardeners *Turks Turbants*, or *Curl'd Lillies*, differ from the *Lillies* I have already mentioned in the Frame and Order of their *Flowers* ; the Blossoms of the *Martagons* hang downward, and have their *Petals* or *Flower-leaves* curl'd or turn'd up, which the *Lillies* have not ; but the *Roots*, *Flower-stems* and *Leaves* are not unlike those of the *Lilly* ; and in respect to their Culture are ordered in the same Manner, and love a light sandy *Soil*. They most of them blow about two Foot high, except the *Virginian Martagon*, which is commonly three Foot in its Flower-stem ; their *Flowers* are of several Colours, some *Yellow* ; others *Scarlet* and variously spotted, but the *Virginian* Kind far exceeds all the others for its beautiful *Flowers*, and is found but in few Places. They are all of them proper for *Parterres*.

SECT. VIII.

Of the FOXGLOVE.

THE curious Gardeners cultivate three sorts of *Foxgloves*; the first or tallest sort they call *Iron-colour'd Foxglove*, the other two are distinguish'd likewise by the Colours of their Flowers, viz. the *Purple* and the *White*; they are all of them rais'd from *Seeds* sown in *March*, but do not blossom 'till the second Year after sowing; the Flowers commonly appear in *May* and *June*. The first blows about four or five Foot high, the other two about three Foot. These Plants delight in the Shade, and thrive well in a Loamy Soil.

SECT. IX.

Of MULLEINS and MOTH, MULLEINS.

THESE Kinds of *Plants* are very rampant, and therefore very proper Companions for the others of this Chapter, few of them blossoming lower than four Foot, but some six Foot high, they are all rais'd from *Seeds* sown in *Autumn*; or if Convenience will not permit at that time, *March* will serve; they delight in sandy Soil, and shady Places; and altho' they are most of them wild *Plants*, yet the beautiful Spikes of *Flowers* which they produce in the Summer, renders them worthy our Regard. There are many Kinds of them bearing *Flowers* of different Colours, some *White*, others *Yellow*, *Red*, *Brown*, *Purple*, *Black* and *Green*, so that I see no Reason why they should not be cultivated among other tall Plants in large Gardens. They blossom the second Year after sowing.

SECT. X.

Of the ACANTHUS.

THIS *Plant* is very rarely found in the Gardens about *London*, and I do not remember to have seen it in above four Gardens in *England*, notwithstanding its Curiosity and easie Culture. The
Flowers

PLANTING and GARDENING. 45

Flowers appear in *June* upon *Stalks* of above two Foot high, they are shaped like the Blossoms of the *Foxglove*, and are of a *Peach-bloom* Colour; the *Leaves* of the *Plant* also are not without their Beauties, full of *Thorns* as any *Thistle*, and prettily variegated. The *Seeds* must be sown in *March*, but will not blossom until the 2d or 3d Year; they love a sandy *Soil*, and *Shade*.

SECT. XI.

Of the WHITE HELLEBORE.

THERE are two Kinds of the *White Hellebore*, one with *Redish Black* Flowers, and the other with *Greenish* Flowers; the first blossoms in *May*, and the other the following Month; the *Leaves*, *Roots* and *Stature* of both Kinds, are much alike; both having curl'd plated *Leaves*, and blossoming about four Foot high. The *Leaves* are of themselves a pretty Ornament, and the large Spikes of their *Flowers* are surprizingly beautiful for their odd Colours; they both die to the *Root* in *Winter*, and are propagated from Off-sets parted in *March*, and planted in a rich light *Soil*. These *Plants* are proper for large *Gardens*, and with them I shall conclude this Chapter, and proceed to treat of such *Flowers* as are less rampant, and take up less Room in *Gardens*.

CHAP. V.

Of Middle-siz'd PERENNIAL FLOWERS.



IN this Chapter I shall mention such *Perennial Flowers* as are of middle *Stature*, and less *Rampant* than the former, and consequently are proper *Inhabitants* for smaller *Gardens*; the first I shall treat of is the *Valerian*, and its Kinds.

SECT.

SECT. I.

Of the *VALERIAN*.

THERE are three *Plants* known to the Gardeners by the Name of *Valerian*, and distinguish'd from one another as follows, *Dodineus's* or *Red Valerian*, *Garden* or *White Valerian*, and the *Greek Valerian*; all these blossom about the same Time of the Year, in *May* and *June*, and may be rais'd from *Seeds* sown in *March*. The first, *i.e.* the *Red Valerian*, is of less Duration than the other two, it blossoms about two Foot high, bearing great Quantities of small *Red Flowers*: I have not try'd whether it is increas'd by parting the *Roots*, but have propagated many *Plants* of the other Kinds that Way in *March*. The *Garden Valerian* blossoms about the Height of the former, bearing Tufts of *White Flowers*, and has this Quality which is found in the first, that the *Root* when it is broken, yields an agreeable Odour. The third Sort, or *Greek Valerian*, blossoms about a Foot high, bearing pale *Blue Flowers* in Bunches on the Top of its Flower Stems. This is a fibrous-rooted Plant, very easily encreas'd by Slips. I have seen this sort with variegated Leaves common enough in several Gardens.

SECT. II.

Of the *Perennial Cyanus*, or *Blue-bottle*.

THIS *Plant* is either rais'd from *Seeds*, or propagated from *Slips* taken from the *Root* in *March*; the Flowers are admired chiefly for their fair *Blue Colour*, which is the most rare of any other in the Flowers of *Plants*; the Flower-Stalks are commonly about two Foot high, blossoming in *May* and *June*; and frequently in *Autumn*; this *Plant* loves a light natural Soil, and an open Exposure.

SECT. III.

Of the Monk's-Hood, or Blue Helmet-Flower.

THIS *Flower* is very common in the Gardens remote from *London*, but in those near the City it is rarely found; the *Flowers* are of a deep *Blue*, and of a surprizing Make; they appear upon Stalks of about two Foot high in *May* and *June*, and are so poisonous, that I have heard the eating only 6 or 7 of the Blossoms in a Salad, has kill'd a Gentleman in *France*, who was not apprised of their evil Quality; it is said that where they grow wild, no Cattle will touch them; and that the sort of Insect natural to this *Plant*, is an Antidote against the Biting of all venomous Creatures; we may propagate this *Flower* by parting the *Roots* in *March*. It delights in a Loamy Soil, and Shade.

SECT. IV.

Of the ROSE-CAMPION.

THERE are three sorts of *Rose-Campion* cultivated in our Gardens, the *Red* and *White-flowering* Kinds, and the *Red Double-Blossom*; they all of them blow about a Foot and half high in *June* and *July*; the first two sorts are raised from Seeds sown in *March*, or from *Slips* taken from the Root at that Time; and the *Double-blossom* Kind, which produces no Seed, is only propagated by *Slips* in the same Month; this last is a desirable Plant for the Extraordinary Colour of its Flowers, which is the most dazling *Red* I have ever seen. A Loamy Soil and open Exposure is the most proper for them.

SECT. V.

Of the Double-flower'd ROCKET.

THE Gardeners know two sorts of *Double Rockets*, the *White Flowering* sort, and that with the *Flesh-Colour* Flowers; they both blow in *May* upon Stalks of about a Foot and half high; the *White Flowering*

ering Kind is more esteem'd than the other, and more commonly found in Gardens; these are propagated from *Slips* taken from about the Root, and planted in *March* in *Loamy Soil*; they delight in open Exposure.

SECT. VI.

Of the *BATCHELORS-BUTTONS*.

THE Flower call'd by the Gardeners the *Batchelors-Buttons*, is of two Kinds, I mean only such as are cultivated in Gardens, for there are other sorts of them which grow wild, and bear only ragged single Flowers, and are not thought worthy our Care. These double flowering Kinds are only different from each other in the Colour of their *Flowers*, the one Red and the other White; the first is common enough in most Gardens, but the White is more rarely found; they produce their Blossoms in *June* and *July*, upon Stalks of two Foot high. These Plants love Shade and a *Loamy Soil*, and are propagated by parting the Roots in *March*.

SECT. VII.

Of the *SCARLET-LYCHNIS*.

THE *Scarlet Lychnis* is a Plant so beautiful, that it cannot well be wanting in our Gardens; the *Single-flowering* sort, as well as the *Double* Kind, are both very delightful to the Eye, they bear their *Trusses* of *Scarlet Flowers* upon Stalks somewhat more than two Foot high in *June* and *July*, and are so much esteem'd, especially the *Double Sort*, that Gardeners usually cultivate them in Pots for the nicest Quarters of their Gardens, or to set in Chimnies in the Summer; this *Double Kind* is increas'd by slipping the Root in *March*, and that with the *single Flower* may be propagated after the same Manner, or raised in that Month from Seeds, which I think blossom the first Year: They love an open Exposure, and a light natural Soil.

SECT.

SECT. VIII.

Of the *SWEET-WILLIAM*.

OF this Plant there are two sorts with *single* Flowers, and a *double* Kind, commonly cultivated in Gardens; the *single* ones differ only in the Colour of their Flowers, the one has *Trusses* of Blossoms variegated with Red and White; and the other, Clusters of Flowers of a deep Crimson Colour. These two bear their Blossoms in *June* and *July*, upon Stalks of two Foot high; and the *double flowering* Kind produces its beautiful red Flowers in the same Months upon shorter Stems. The first two Kinds, *viz.* those with the *single* Flowers, may be rais'd from Seeds sown in *March*, and will blossom the second Year; but the *double* Sort is only propagated from Slips taken near the Root about *March* or *April*, and planted in a Loamy Earth, which they delight in. The others may be also encreas'd after the same Manner, or may be laid down in the Earth like *Carnation* Layers.

SECT. IX.

Of the *CARNATION* or *JULY-FLOWER*, *Vulg.*
GILLYFLOWER, and *PINKS*, their several Kinds.

THIS admirable *Flower* is of all others the most delightful, as well for the agreeable Scent as for its beautiful Colours; the Varieties of it are hardly to be number'd, every Year producing new sorts of it from Seeds. The Gardeners divide it into five Classes, which they distinguish by the Names of *Picketees*, *painted Ladies*, *Beazarts*, *Flakes* and *Flames*: The Flowers of the *Picketees* are always of a White Ground spotted, or pounced (as they call it) with Red or Purple: The *painted Ladies* have their *Petals* tinged, on the upper side, either with Red or Purple, and the under side of their *Flower-leaves* is plain White; the *Flowers* of the *Beazarts* are strip'd, or variegated with four distinct Colours; the *Flakes* are of two Colours only, and those always strip'd; and the *Flames* have a red Ground always

strip'd with black or very dark Colours. Each of these *Tribes* is very numerous, but the *Picketees* chiefly, of which I have seen above one Hundred different sorts in one Garden, every one distinguish'd by the *Name* or *Title* of some Person of *Note* or *Quality*. The *Florists* likewise mark the Properties of these Flowers by the Shape of their *Flower Pods*; that Race of them which blow without bursting, are call'd *long podded* Flowers; and the other, whose *Petals* cannot contain themselves within the Bounds of the *Chalyx*, are call'd *round podded* Flowers. I have measur'd the Blossoms of some of the last Kinds above four Inches over, but have heard of some that were larger. These Flowers are not of any certain Height, some of them blowing near four Foot, and others not two Foot high, and the Time of their flowering is also as uncertain as their Stature, some of them beginning their Blossoms in *June*, others not 'till near *August*; but this happens from the different Seasons of sowing the Seed; those which are put into the Ground about *March* will blow sooner than those sown in *May*; altho' they do not blossom 'till the second Year; however, the Height of their Bloom is about the Middle of *June*, as it is then the *Florists* have their grand Assembly, to shew their Varieties and name their new Curiosities. These Flowers are propagated either from Seeds or Layers, and as they are so particularly admir'd, by all Lovers of a Garden, I shall be the more exact in the Method of their Culture: First then, to begin with their *Seeds* and Manner of sowing them; my Reader may remember that in the second Chapter of my first Part, concerning the Generation of Plants, I have endeavour'd to explain how the *Dust* of one Flower will impregnate and enliven the *Seeds* of another; and that from that accidental Coupling, the *Seeds* are so chang'd as to produce Plants with Blossoms varying from those of the Mother-Plant. I have likewise shewn why double *Flowers* seldom bear *Seed*, which I conjecture is because the *Male* Parts in them are either not perfect, or else are confin'd from Action by the Multiplicity of the *Petals*. This Consideration leads me to advise the Curious *Florists* to plant of every good sort of his double

Carnations

PLANTING and GARDENING.

31

Carnations in Beds on a Line in the Middle; and on each side of them to set at least two Rows of single ones of choice Colours, and among them some Plants of *Sweet-William*, and of the *China* or *Indian Pinks*, which have such Varieties of odd Colours in them, as I shall mention hereafter. The *China Pinks* and the *Sweet-Williams*, bearing single *Flowers*, as well as the single Carnations, may have Opportunities of communicating their *Farina* into the Cells of the double ones, and set their *Seeds*, which if they do, we shall not only gather a larger Quantity than we could otherwise expect, but likewise be assur'd of great Varieties from them. If we have good fortune enough to find the *Seed-Vessels* begin to swell, we must guard them carefully against two Evils, *Earwigs* and *Wet*; the first may be destroy'd by hanging Hoggs-Hoofs, the Bowls of Tobacco-Pipes, or Lobsters-Claws, on the Tops of the Sticks which support the *Flowers*, and killing the Vermin, which will lodge in them, every Morning. And to preserve the swelling *Fruit* from rotting by too much *Wet*, shelter the *Flowers* with little Basons or Trenchers, which will likewise serve to keep off the too great Heat of the Sun, which would hinder their Growth. With this Care you may expect to find the *Seeds* ready to gather towards the latter End of *September*; this Work must be done when the Weather is dry, if possible, lest after all our Pains they grow mouldy and decay. Gather the *Seeds* with the Stalks they grow upon, and let them remain in that state expos'd to the Sun through a Glass for a Month or two, without opening any of the *Husks* or *Seed-Vessels* 'till the Time they are to be sown, which according to my Opinion is best done in *April* in the following Compost.

TAKE two Load of sandy Loam (as the Gardeners call it) or of my medium Soil, to which add one Load of well consumed melon Earth; sift these well together, and let your Heap lie for a Time to mellow, then sift it a second Time, either to sow the *Carnation Seeds* in, or to plant your *Layers* or *Roots* of them upon. Having fill'd your Pots with this Earth and smooth'd it on the Top, sprinkle on your *Seeds*, and covering them half an

Inch with the same Compost, press it gently with a Board, and let them stand exposed to the Weather, the Seed will be up in about three Weeks, and the young Plants big enough to transplant into Beds the *July* following, they must be set about ten Inches distant from one another, and shaded from the Sun with Mats for about three Weeks, uncovering them every Evening for the Benefit of the refreshing Dews. The second Year after sowing you may expect many Varieties from the seedling Plants, and 'tis in this, the great Pleasure of Gardening consists. Whatever Rarities you find in this Nursery, must be *laid* down so soon as possible, by cutting half thro' a *Joint*, and splitting the *Internode* upwards half Way to the other *Joint* above it; then must the wounded Part be buried in the Earth, and fasten'd down with a Hook of Wood, 'till it strikes Root, and can shift for it self, which will be in two Months Time, if the Earth be light. But as the Time of laying down the *Layers* of the Seedlings is uncertain, in that we cannot know which are deserving of that Trouble, therefore I shall take notice, that the most proper Season for this Work, is in *July*, so soon as the *Layers* are big enough for that Operation, that they may get *Roots* betimes to be taken from their Stocks, and transplanted early in the Autumn, where they are to remain all Winter. Tho' some rather chuse to leave them on the old Roots 'till *March*, before they transplant them: But that I cannot approve of, because I have experienc'd, that the Removal of these *Flowers* in the Spring, often endangers them, and makes them blow late and weak; whereas, on the contrary, if when we take of the *Layers* in Autumn, we then plant them either in the Pots or Borders where they are to blow, we are certain of their Blossoming somewhat earlier, and much stronger, and besides, their *Increase* or *Layers*, will be in a fit Condition to lay down betimes. However, whether we plant out these *Flowers* in Autumn or in the Spring, it will be necessary to acquaint the Planter that they should be shaded or defended from the Sun for a Fortnight after planting, and during the Winter should always be nigh some Place of Shelter in Case of severe Frosts.

Frosts. It remains now for me to say something of the *Blowing* of a Flower as it is practised by the most Ingenious Florists; about *April*, when the Flower-Stems begin to put forth, (or *spindle*, as the Gardeners term it) we must place by each Flower a straight Stick of about four foot long, and tye the *Spindles* to it as they shoot. So soon as the Flower-buds appear, leave only one of the largest upon each Flower-stem to *blossom*, about ten Days before the *Flowers* open themselves, the *round podded* Kinds will begin to crack their Husks on one side, then must the careful Gardener with a fine Needle split or open the Husk on the opposite side to the Natural Fraction, and about three or four Days before the compleat opening of the Flower, must cut off with a pair of sharp Scizzars, the Points on the Top of the Flower-Pod, and supply the Vacancies, or the Openings on each side of the Husk with two small Pieces of Velom, or Oil-cloth, which he may easily slip in between the *Flower-Leaves*, and the Inside of the *Husk*, so will the Blossom display its Parts equally on all sides, and be of a regular figure; but besides this Care, it is a common Practice, and with very good Reason, when the Blossom begins to shew its Colours, to shade it from the extream Heat of the Sun, either with a Trencher-like Board, or some other Device of the like Nature fasten'd to the Stick that supports it; for *Flowers as well as Fruits grow larger in the Shade, and ripen and decay soonest in the Sun.* Thus I have done my best Endeavour to inform the Curious Gardener of the most proper Method for Increasing and Improving of this Flower; but am obliged, before I conclude this Section, to mention the several sorts of *Pinks* proper for Gardens, which are of the same family with the *Carnation*.

THE *Pinks* most commonly cultivated in Gardens are the *Red Double-Pink*, the *White Double-Pink*, the *Double-Pheasant Eye-Pink*, the *Dwarf Double-Mountain-Pink*, and the *China-Pink*; besides the common single ones rais'd from Seed sown in *Drills* or *Lines* about *March*. The first three of these blow about a foot and half high, and altho' they have been frequently used for Edgings in Gardens, yet I shall take the freedom to direct them

rather for the Inside of Borders, where they should be planted in Spots, they are too apt to grow irregular in Edgings. The *Dwarf Mountain-Pink* indeed, as it is a slow Grower, and is seldom above eight Inches high, may well enough be placed on the out-sides of Garden-beds; but that sort is now rarely found. These four Kinds of *Pinks* are all raised from *Slips* planted in *August*, or very early in the Spring. The *China-Pink* is admirable for its strange Variety of odd Colours, and its surprising Variegations in the Middle of its *Flowers*; this sort is yet a Novelty with us, and to be met with only in some curious Gardens; it is rais'd from Seeds sown in *March*, and blossoms the first Year about a foot high, and will resist the frosts of our Climate, if the Flower-stems are cut down as soon as the *Blossom* is over.

SECT. X.

Of the WALL-FLOWERS.

I Have seen five sorts of *Wall-flowers* cultivated by the Gardeners, which are very well deserving Place among the most delightful Flowers for their pleasant Odour and lasting Blossoms; the most common sort of them is that with the *Double Yellow-flower*, and the more rare Kinds are the *Double Yellow* with variegated Leaves, the *Double White*, the *Bloody Wall-flower*, whose Flowers are Yellow tinged with Red, and a new sort with large *Single-flowers*, variegated with Yellow and Brown, all which blossom about the same Season of the Year, and about two foot high from the Ground, and may be raised from *Slips* planted in shady Places, either in *March*, *April*, *May* or *June*: But the last sort may be more easily propagated from Seeds sown in *March*. The Seed-Vessels of this and other single Kinds of it, as well as their Flowers, are so like those of the *Stock July-flowers*, that I am of Opinion they might be made to impregnate each other's Seeds if they were planted nigh enough together, and from such Coupling, perhaps, might be produced a *Stock July-flower* with Yellow Blossoms. It is what I design to try, my self, as well as many other Couplings of the like

like Nature; and altho' the Seed of such a neutral Plant would not be made to grow, the Species may be continued and increas'd by planting *Slips* or *Cuttings* of it, as is common in the Culture of *Double-Stocks*. These *Wall-flowers* delight in sandy Soil, or to grow among Rubbish.

SECT. XI.

Of STOCK JULY-FLOWERS, *Vulg.* GILLY-FLOWERS.

THESE are *Shrubs* like the former, commonly about two foot high, some sorts of them blossoming almost all the Year. The single Kinds of them are all rais'd from Seeds sown in *March*, and will come up, and be fit to transplant the Autumn following, but do rarely blow 'till the second Year, unless they be raised in Hot-beds, or are of the Annual Kind, as they call it. Among the Seedlings, we often find Plants with double Flowers, which should be carefully transplanted into Pots for the Ornament of the nicest Places in the Garden, or to adorn Chimneys in the Summer. The double Kinds may be increas'd by *Slips* or *Cuttings*, planted in *May*, *June* or *July*; but it is not worth while to propagate the single ones, after any other Manner, than from their Seeds. There are five sorts of them, besides the *Dwarf* Kind, or *Annual-Stock* for Edgings. The *White flowering* Kind, that with the *Purple-flower*, the *strip'd* sort, the large *Red Brompton Stock*, and that sort which blossoms the first Year; of all which the *Brompton* Kind is esteem'd to be the best: The Scent of their Flowers is very grateful, and the several Colours of their Blossoms, if they are well mixt, are extremely beautiful. They love a light Natural dry Soil, and are apt to perish by too much Wet in the Winter, therefore it is advisable to sow a young Nursery of them about *August* to blow early the next Year, if the great Plants drop off as they did every where in the severe Frost of the last Year.

I cannot any where, so properly as in this Place, take Notice of an Observation which an ingenious Gentleman has communicated to me concerning the Seeds of Plants,

and particularly of those of the *Stock July-flower*; he says that he once bought some *Stock-seed* of a Gardener near *London*, which he sow'd in his Garden in *Oxfordshire*, and brought him great store of double Flowers, and some few single ones of an extraordinary Colour and Bigness, which were so much admired by the Gardeners round about him, that he was continually solicited for some of the Seed. He saved a large Quantity, and supply'd several curious Persons with it: What he gave away maintain'd for the first Time of sowing, its first Excellency, but what he sow'd in his own Garden lost its good Qualities. In short, he was now become a Supplicant to those he had set up, and from the Seeds they had saved, he had the Pleasure of raising many *Double-flowers*, while those who had saved the Seeds, complain'd of their ill Luck, and were apt to say, that if they had not gather'd them with their own Hands, they should have believed they had been imposed upon; at last, they all agreed mutually to Exchange the Seeds of this and other *Flowers* annually, and every one had good Success. This Story, I think, plainly shews how much the Change of Air and Soil contributes to improve some particular *Vegetables*.

THE Annual Stock for Edgings will be more properly introduced in the Chapter relating to other Annuals.

SECT. XII.

Of the French HONY-SUCKLE.

THIS Plant bears Spikes of *Purple-flowers*, much like those of the *Lupines* in their Figure and Manner of Growth; it blossoms above a foot high, and makes an agreeable Show. It is raised from Seeds sown in *March* or *April*, in the Natural Ground, which should be light, and lie exposed to the *Sun*; the seedling Plants will not blossom 'till the second Year, and sometimes not 'till the third, especially if the Ground be overmoist. 'Tis a hardy Plant, and will live several Years.

SECT.

SECT. XIII.

Of the *FLOS-CARDINALIS*.

I Have seen and cultivated only two sorts of the *Cardinal Flower* in *England*; the one blows almost three foot high, with slender Stalks, and most beautiful Flowers of a ruby Colour; the other blossoms about two foot high, and bears pale *blue Flowers*; the Seeds of both these Kinds are brought from *Carolina*, and I think from *Virginia* likewise; they must be sown in Hot-beds about *March* in sifted light Earth, the Seeds are so small that they must be but thinly cover'd with Mold, otherwise they will not come up, and the same Rule must be observ'd in the sowing all Manner of Seeds, to cover them with Earth in Proportion to their Bigness. These Plants begin their Blossom about the latter End of *July*, and continue flowering above two Months; they are commonly cultivated in Pots, as well to give them some little Shelter in the most severe Frosts, as to place them in proper Places for Ornament in Houses, but I am satisfied they will grow in open Borders, and thrive very well in such Places. In *April* they may be increas'd by parting their Roots, and should be planted in Places exposed to the *Sun*.

CHAP. VI.

Of the lowest Kinds of PERENNIAL FLOWERS.



THE Plants which I shall treat of in this Chapter are such as are of the smallest Kinds, and therefore the most proper for the out-sides of Borders or Garden-Beds, and to be cultivated in small Gardens; the first I shall make Mention of is the *Primrose*, and *Cowslip*, which are by the Gardeners both included in the Name of *Polyanthos*, tho' without Reason; for the *Primrose* bears only one Flower upon a Stalk, but the *Cowslip* indeed answers to the Name by bearing many Flowers upon a Stem;

Stem ; but Difficulties of this Nature I hope to set to rights some other time in a *Botanical Nomenclator*. In the mean while I shall treat the Gardener in his own Language.

SECT. I.

Of the *POLYANTHOS*.

THIS sort of Plant is generally divided by the Gardeners into two Classes, viz. the *Primrose* Kind, and the *Cowslips*. These are again distinguished by the Terms of *single flowering*, *double flowering*, *Hose in Hose*, *Pentaloons*, and *Feathers*. The *single flowering* sorts I need not explain, but take Notice only that their Colours are chiefly *White*, *Yellow*, *Red*, *Purple*, and sometimes *Violet Colour*, and frequently variegated in their Flowers. The *double* Kinds are not above four in Number that I know of, the *double Primrose*, the *double Paper white Primrose*, the *double red Primrose*, and *double Cowslip* ; the Blossoms of which are full of *Petals*.

THE *Hose in Hose* Kind has its Blossoms one in another, without Cases. The *Pentaloons* have green Leaves about their Blossoms, which are sometimes variegated with the same Colours of the Flowers they encompass ; and the *Feathers*, which seem by Nature to be at first design'd for *Hose in Hose*, have their Blossoms so split and curl'd, that they somewhat resemble Bunches of *Feathers*. Of these there are many Varieties which are multiply'd every Year by sowing their Seeds ; the Curious in this Way sow them in *February*, upon a Place prepar'd with Earth taken out of decay'd Willows, often refreshing the new sown spot with Water, and keeping it shaded from the Sun all *April* and *May*, 'till the young Plants are above Ground. The Seedlings so rais'd, will be fit to transplant into Beds the *July* or *August* after they are sown, the Soil should be somewhat binding, and their Exposure to the Morning Sun ; so will they be prepar'd to blossom the *March* and *April* following. These Plants may be likewise propagated by parting their Roots in *August*, which is a much better Season for that Work than the *Spring*, altho' it may be done

PLANTING and GARDENING.

done at that Time even when they are in Flower. I have observ'd that such *Polyanthas*, as I have cultivated, began to lose the Beauty of their Colours, if I let them stand two Years without parting, and even then would decline; so that I advise every one who covets this Plant in Perfection, to sow them every Year, and transplant frequently. The *Primrose* Kind of these, blossom close to the Ground; and the *Cowslips*, about six Inches high, both sorts may be planted near the Edges of Borders, and near Houses, for the sake of their pretty Smell.

BUT to leave the Garden a little, I must recommend to my Reader the Planting of some of the common sorts, that grow in the Woods, in some of the most *Rural* Places about his House; for I think nothing can be more delightful than to see great Numbers of these Flowers, accompany'd with *Violets*, growing under Hedges, Avenues of Trees, and Wilderness Works.

SECT. II.

Of the *AURICULA*.

THIS Flower above all others has been the Pride of the Gardeners, and was so much in Esteem some few Years ago, that I have known one Root of it sold for twenty Guineas; but that was indeed when they began first to appear in our Climates. The Art of raising them was discover'd and became familiar, and the foolish Vanity of diminishing a Fortune for a Set of Flowers was then lay'd aside; and now the Collections which were before without Price, may be purchas'd upon reasonable Terms. These Flowers are indeed very delightful, as well for their surprising Varieties, as the Fragrancy of their Smell; they blossom in *April*, and are in the Height of their Bloom about the 20th of that Month; they blow commonly about six Inches high. The numerous Varieties of these Flowers are all distinguish'd by the Names and Titles of great Men; and I have often thought of a pleasant Expression of a Friend of mine concerning these Flowers and their extravagant Prices, *That the Auricula's increas'd so fast, and the Great or Wise Men decreas'd so fast, that in a short time*

time this Tribe of Plants would want Men of Note to take their Names from. But if it is possible for us to admire the Beauties of this Flower, when we may raise them with little Trouble and a moderate Expence, my Reader may supply himself with them by following the Directions I shall here lay down for their Culture; and that he may be a right Judge of what are good among them when they come to blow, I shall present him with a Table of their several good Qualities requir'd by the skilful Florists. A good *Auricula* ought to have the following Excellencies; *First*, That the *Flower-stem* be strong and substantial; *Secondly*, The *Foot-Stalks* of the Flowers must be short, and capable of supporting the Blossoms upright; *Thirdly*, That the *Pipe* or *Neck* of each Flower be short; *Fourthly*, That the Flowers be large and of a regular form; *Fifthly*, Their *Colours* should be bright and well mixt; *Sixthly*, That the *Eye* be large, round, and of a good *White*; and *Lastly*, That the Flowers spread themselves flat, and be no ways inclinable to *Cup*.

WITH these Perfections we may account an *Auricula* to be good, and from such only we ought to save Seeds for sowing and propagating others, if we hope for Success; and as a Help to our Design let us consult the Chapter relating to the Generation of *Plants*, and improve the Variety by placing such Flowers as are of the most different Colours together whilst they are in Blossom; that so the *Seed-Vessels* of the one may receive the *Dust* of the other, and by that Means give us an agreeable Mixture of Colours in those Plants we raise from Seed; and it would be well worth our Enquiry, whether the Seeds thus impregnated partake more of the Shape or of the Colours of the Flowers of the Mother Plant; to be certain of which, the Plant you make tryal of must be castrated of its *Apices*, before they are ripe or burst open.

THE Seeds of this Flower should be gather'd so soon as the Flower-stem is Yellow, and the Seed Vessels come to their full Growth: In the saving and preserving of these Seeds, as well as all others, I would advise, that the whole *Truss* or *Bunch* of Seed Vessels be gather'd with the Flower-stem, and remain upon it 'till the time

of

of sowing ; for certainly nothing contributes more to the Strength and Vigour of Plants to be rais'd from Seeds than a right Method of preserving such *Seeds* 'till the time of sowing ; and what can better instruct us in that Method than Nature it self ? Here I suppose some People will find fault with my Advice, and be apt to say, that if the *Stems* of the *Auricula's* with their Seed Vessels had remain'd upon the Plant, the Seeds would have fallen to the Ground, as soon as they had been ripe, and where is then my Argument that Nature would keep them cas'd all the Winter, as I propose to do from her Example ?

To these I answer, that the *Seeds* of *Vegetables* are like the *Eggs* of *Fowls*, which after they are perfected in the *Matrices* of either, will only keep good a certain time before they ought to be *Set* or be put into a proper Posture for hatching ; the Seeds which fall to the Ground are nourish'd by the Earth they fall upon, 'till the proper Ferment begins for their *Vegetation*. And if they are kept in their Cells 'till a proper Season for sowing, it is very reasonable to believe they will find there a natural Nourishment ; since it is known, that they were perfected from the same *Juices* in the same *Cells*, and that were they to lie dry in a Chamber for six Months, without either Earth or their own natural Nourishment to feed from, they must certainly lose their Strength, altho' perhaps they may not entirely decay. But to proceed, the *Seeds* of the *Auricula* should be gather'd in a dry Morning as I have directed, and laid upon Sheets of Paper in such Places where three Hours Sun may pass over them every Day for near a Month, 'till they are out of Danger of growing mouldy, then may they be laid by in a dry Place, 'till the first Week in *February*, at which time the *Seeds* may be clean'd out and sown in the following Manner:

PREPARE a Box of Oak or Deal four foot long, two foot wide, and six Inches deep, with Holes in the Bottom six Inches distant from one another. In this Box lay two Inches thick of *Cinders* of Sea Coal, and over them spread some fine sandy Loam the Depth of three Inches, over which sift some Earth taken out of hollow *Willow Trees*, 'till the Box is full, and then sow the

the *Seeds* on the top without any Covering of Earth, only pressing them into the *Mould* with a Piece of flat Board to settle them below the Edges of the Box; that in Watering, the light *Seeds* may not float over the Brims; this Seminary must be continually refresh'd with Water, so that it never be dry, for without a constant Moisture the *Seeds* will not come up. It is necessary to cover the whole with a Net to prevent the Birds from destroying the *Seeds*; and likewise to acquaint the Gardener, that from the time of sowing to the Beginning of *April*, the Box should be so placed as to receive the Heat of the Sun, but after that time should be removed into some shady Place, lest the young seedling Plants be scorch'd and wither'd away. But if it should so happen thro' the Neglect of Watering, that the *Seeds* do not come up the first Year, let the *Case* be preserv'd 'till the Year following, and there will certainly be a good Crop, as I have often experienced.

THE Seedlings will be strong enough to transplant the *July* or *August* after they appear above Ground, they should then be planted about four Inches distant from one another, in Beds of light Earth well sifted, where if possible they may only enjoy the Morning Sun, and it will be necessary to shade them even from that Warmth for a Fortnight after Planting. The *April* afterward, you may expect some of them will begin to shew themselves, and then as they answer the good Qualities I have mention'd, transplant them into Pots fill'd with any one of the following *Soils*.

First, To half a Load of Sea-Sand, add one Load of Loamy Soil, and one Load of Melon Earth, let all these be well mix'd and sifted together.

Second Earth, TAKE one Load of sandy Loam, to which add the like Quantity of Melon Earth, mix and sift these together.

Third Earth, TAKE of rotted Wood, or the Bottom of a Wood-pile, one Load, to which add the same Quantity of Loam, and half a Load of Melon Earth prepared as the other Earths.

I have already hinted, in the first Part, but I shall once more take Notice, that all mix'd *Soils* or *Composts* should

should lie some time for the several Parts to incorporate with one another before they are used. The three sorts I have here set down have been made use of by several Gardeners with Success. I shall not pretend to say which is the best, for I have seen *Auricula's* blow well in each of them, therefore shall leave my Reader to please himself. I think there remains little more for me to say, concerning this Flower, than to take Notice of the Method commonly used in the Blowing them, which is thus. Set your Pots upon Shelves, one above another, in such a Part of the Garden where the Morning Sun may only come at them, and as these Flowers are commonly cover'd with a sort of Dust which contributes in great Measure to make them beautiful, some Covering must be provided for their Shelter against Rains which are apt to wash it away, and destroy their Colours. The Seasons for parting their Roots are either when they are in Flower, or about St. James's Tide, but the latter is judg'd to be the best. And now I shall conclude this Section of the *Auricula's*, with a Word or two of Advice to the Curious Florist, that he observe to keep them from much Wet in the Winter, often taking away their rotted Leaves, and that he does not let the first Week in *January* pass (if the Weather will permit) without taking the decay'd Earth from about the Roots of his Flowers, and filling up the Pots with fresh, from his Heap of prepared Soil. By which Means his Plants will be strong against their flowering Season.

SECT. III.

Of the BLACK-HELLEBORE or CHRISTMAS-FLOWER.

OF these Plants there are reckon'd three sorts among the Gardeners, which are all *Dwarfs*, and very proper for small Gardens, seldom Blossoming above half a foot from the Ground; the most forward Blower of them is the *Black-Hellebore* with the *White Flower*, which begins to blossom about *Christmas*, and continues 'till *February*: The second sort is that with a *Green Flower*, blossoming about the same time; and the third sort has a small cut Leaf almost like *Fennel*,

nel, and bears a *Yellow Flower* in *May*; all these are propagated by parting the *Roots* in *September*, and delight in a *sandy Soil* and *Shade*. I have indeed taken off their *Off-sets*, and planted them when they were in *Flower*; but *Autumn* is much better. As yet, I have not seen any ripe *Seeds* of these *Plants*; but I suppose it was for want of examining them at due *Season*; if they bear any, as I am pretty well assured they do, the proper *Season* of sowing them is so soon as they are ripe. Every one of these sorts is so rare, that they are hardly to be met with, unless at *Mr. Fairchild's* at *Hoxton*.

SECT. IV.

Of the GENTIANELLA.

THIS *Plant* is one of the lowest *Race*; I have seen but one sort Cultivated in our *English* *Gardens*, altho' there are many *Varieties* of it frequently found in the *Dutch* *Collections*, and those of *Neighbouring* *Countries*; the *Flowers* of that Kind which is known to us, almost touch the *Ground*, but are, notwithstanding their *Humility*, as great an *Ornament* to a *Garden* as any *Flower* I ever saw; their *Blossoms* open in *April*, and also frequently appear in *November* and *December*, if the *Weather* be open; their admirable *Blue* *Colour* is hardly to be imitated by *ultra Marine* it self. This *Plant* delights in a *sandy Soil*; where it will put forth many *Slips*, which may be either parted from the *Root* in *March* or *August*.

SECT. V.

Of the HEPATICA.

THE *Hepatica* is of several *Kinds*, viz. that with the single *White* *Flower*, the single and double *Peach Colour'd* *Flowers*, and the single and double *Blue* *Flowering-kinds*; those with the single *Flowers* begin their *Blossom* in *January*, if the *Weather* be open, and the double flowering sorts blow a *Month* later; they are encreas'd by parting their *Roots* either in *April* or *September*, and will only thrive in a light *sandy Soil*.

SECT.

SECT. VI.

Of the *VIOLET*.

THERE are several sorts of *Violets* commonly Cultivated in Gardens; the most common of them are the single *Blue* and *White* Kinds, the more rare are the double *Blue*, the double *White*, and that sort with *Variiegated Leaves*; all these Kinds blow in *March*, and besides their Beauty, perfume the Air with a most delightful Odour. The sorts with double Flowers Blossom also in *Autumn*, if their Roots are strong. These *Plants* may be increas'd by transplanting their *Runners*, which will of themselves take Root at every Joint without any Art.

THE proper Season for this Work is either in *February* or *September*, but the last is the best. These should be planted among *Primroses* and *Cowslips* under Hedges, and the most rural Places of the Garden, or near the Edges of Garden-Beds; they delight in binding Soil and shady Places.

SECT. VII.

Of the *DASIES*.

THE *Daisy* is one of the smallest *Plants* that grows, its Flowers blowing about three Inches from the Ground. The Sorts commonly known and cultivated in Gardens are, the *Double Red*, the *Double White*, the *Double Red and White*, the *Coxcomb* or *Rainbow Daisy*, and the *Hen* and *Chicken Daisy*; the last of these has little *Stalks* of Flowers growing out of the main Blossoms; besides these, I have seen near fifty different sorts which were rais'd from Seed in one Year by Mr. Fairchild at *Hoxton*, which I suppose were produced from the Coupling of the *Mother Plants* one with another; for which Reason I would advise every curious Gardener to sow the Seeds of his best *Dasies*, that have stood near enough to couple about *August*, or early in the Spring, that he may furnish himself with Varieties. These *Plants* are encreas'd by parting their Roots either in the *Spring* or *Autumn* Seasons,

Seasons, and love a binding Soil. They make pretty Edgings for *Flower-Beds*.

SECT. VIII.

Of THRIFT or SEA-GILLYFLOWER.

I Have had three sorts of *Thriffs*; the *Common*, the *Scarlet-Flowering* Sort, and that with the *White Flower*. These are only proper for Edging of large Borders in long Walks, or the most rude Parts of Gardens; they Blossom in *May*, and continue a long time in Flower. We may propagate them from *Slips* in *August* or *March*, they love a strong Soil. N. B. The *Sea-Pinks* make good Edgings for long Walks, and may be propagated after the same manner as the former.

I have now given my Reader an Account of all the *Perennial Plants*, which I think are worthy of our Care in Gardens; and shall now proceed to give proper Directions for the Culture of the next degree of *Hortulan Plants* with *Bulbous Roots*.

CHAP. VII.

Of BULBOUS or ONION-rooted Plants.



ALTHO' a BULB is properly such a Root as is round and succulent, made of many *Tunic*s wrapt over each other, like the Root of an *Onion*; yet according to the Gardeners I shall comprehend under the Title of *Bulbous-rooted Plants*, the *Anemonies* and *Ranuncula's*, tho' their Roots differ from the Shape I have describ'd a *Bulb* to be of. I design in this Chapter to speak first of those *Bulbs* or *dry Roots*, (as they are call'd by some) which are commonly taken out of the Ground every Year as soon as their *Stalks* are decay'd.

SECT. I.

Of the TULIP.

THE *Tulip* wants nothing (in my Opinion) but a grateful Scent to make it the finest Flower in the World; there are infinite Varieties of it walt-

ly different from each other, which display their Beauties, and eclipse the Glories of all other *Plants* of the Garden; these Ornaments of Nature are as kind as they are beautiful, some or other of them Blossoming from March to the latter end of May. They are divided into two *Classes*, viz. the *Præcoce Tulips*, or early Blowers, and the *Serotine* or later Blowers; and these may be distinguish'd by their *double* and *single Flowers*. Again with respect to their Colours and Stature, they have other Denominations, as *Bagats*, which are the tallest Blowers, commonly *Purple* and *White Marbled*; Secondly, *Agates*, which grow shorter than the former, whose Flowers are vein'd with two Colours; and Thirdly, *Beazarts*, which have four Colours, tending to *Yellow* and *Reds* of several forts. The Varieties of these kinds are severally distinguish'd by the Names of Cities, or such like Characters. The good Qualities of *Tulips*, which the Gardeners generally approve of, are the Beauties of their Colours, the strength and Height of their *Flower-stems*, and that their Flowers be of the shape of an *Egg* without sharp Points on the top of their *Petals*, but above all their Novelty.

I have often wonder'd at the Extravagant Price, which has been, and even at this day is given for these Flowers in *Holland* and *Flanders*, when every Year produces so many new Varieties; there are indeed the best in those Countries that I have ever seen, but I believe if we in *England* took the right way for their Management, we might soon boast of our good Success, and propagate great Numbers of them at a very Cheap Rate. For this end I shall set down some Tryals I have already made, and offer some reasonable Conjectures, which may yet farther contribute to their Improvement.

THE Method of raising them from Seeds is what I shall first offer to my Reader. The *Flower-stems* being left remaining upon the Root will perfect their Seeds about *July*, which will be fit to gather when the *Seed-Vessels* begin to crack or burst open. They should then be cut close to the Ground in a dry Day, and laid in some dry Place till *September*, which is the most proper Season for sowing them, and the following Spring they will

will come up, if they are kept under shelter. The first Year their Roots will be no bigger than *Wheat-Corns*, but after their second appearance above Ground, they may be taken from the *Pot* or *Case* they were sown in, and sow'd or sprinkled over a Bed of Natural sandy Soil well sifted, where the thickness of half an Inch of the same Earth should be spread over them; thus may they remain without any other Culture, than adding half an Inch of Earth for their covering every Year till they begin to blow, which will be in five or six Years after sowing. But let no Man be discourag'd at the length of time they lie in the Ground without Flowering, the *Plant* will answer his Expectation; let him sow every Year, and he will gain new Varieties successively, when his first Seminary begins to blow. I have known many fine *Tulips* rais'd by this means, but have once heard of a large Bed of *Seedlings*, which were only of plain Colours without Variegations, but that might happen from the Qualities of these Flowers which the Seeds were sowed from. But however, if by chance our young Nursery should prove all of them plain Flowers, we are not yet without hopes, the Plainness of their Colours I suppose to proceed from a Strength of Nature, as we are sure the Variegations of all Flowers are the Effects of Weakness and want of Nourishment; for whoever has cultivated those sorts of *Tulips* which are call'd *Breeders* must know they are of plain Colours, and are always large tall blowing *Flowers*; 'tis from those *Breeders* are commonly produc'd the *Flowers* of the greatest Value for their Stripes sake; now and then one of them breaking (as they term it) into beautiful Mixtures of Colour or Variegations. This Alteration of *Tulips* is reckon'd by the Gardeners to be the Effect of Chance; but I believe the two following Observations will explain the Mystery. Near *Bruxelles*, a Man is famous for a little Spot of Ground, in which by some strange Virtue (as is reported) these *Breeding Tulips* change themselves into fine variegated *Flowers*, insomuch that their Roots are brought thither from several parts, to be Educated and brought up for the nicest Collections, and Money given for their standing. In that place it is rare if three in

five do not break into Stripes, the first Year after they are planted; but this Alteration I think may be accounted for, by examining the Soil, which is nothing but common Rubbish sifted; or at most there is not one twentieth part of it Natural Soil.

It is very plain that a Soil of this Nature must Impoverish the Roots that are set in it, and consequently the *Flowers* must some way or other shew the Distemper of the Roots from whence they spring. And to continue the Variegations of *Tulips*, they are taken out of the Ground every Year as soon as they have done blowing; for if they were always to remain in the Earth, they would in time become plain Flowers. But Secondly, the other Observation I have made concerning the striping of these *Flowers* was in a Gentleman's Garden near London, who planted a Bed of *Breeding Tulips*, and the following Year, when they came to Blow, he found a fine strip'd *Tulip* at each Corner of the Bed, and none of the others were any ways alter'd; this I suppose happen'd from four large *Pyramid Yews*, which then grew at the several Corners of the Bed, and had exhausted the Natural Strength of the Soil about 'em. I shall therefore recommend these Observations to the serious Consideration of every ingenious *Florist*. And now supposing that by these or any other means a Gentleman is stock'd with a good Collection of Rarities of this Sort, I shall proceed to acquaint him of the proper Method of planting and cultivating them; and first of the Soil.

IN *Holland*, where I have seen the finest Collections of this sort of *Flower*, the Soil is naturally *Sandy*, as near as I can judge, about two parts in three of *Sea-Sand* to one of common black Earth; in this Soil I have seen of the *Bagett* kind of *Tulips* blossom above three Foot high, and the other Sorts in proportion. The Curious in that Country always observe two things in planting their *Tulips*; the first is, to Plant all the forward Blowers in a Bed together, and when they Plant the late *Flowering* kinds, they place the tallest Sorts in the middle Line of the Bed, and of each side of them set two rows of the shortest Blowers; the Season for putting in these Roots is from the last Week in *August* to the end

of *September* if the Weather be fair, and after that they need no Shelter till *March* that the Flower Buds appear, and then they ought to be defended from Blights with Matts or painted Cloth strain'd upon Hoops, which Covering serves also for sheltering the *Flowers* when they are blown, from Rain and the scorching Heat of the Sun, either of which would quickly spoil the Blossoms. These are always taken out of the Ground, as soon as their *Flower-stems* begin to decay, and being well dry'd are laid up in Paper, till the planting Season returns.

N. B. The best *Bagett-breeders* are call'd *Bagett Primo's*, and are sold in *Holland* now for five Pounds per Hundred. These *Flowers* are increas'd from Off-sets which grow about the Roots.

SECT. II.

Of the *RANUNCULUS*.

THE *Ranunculus*, next to the *Tulip* is desirable for its Beautiful *Flowers*; there are many Varieties of it brought from *Turkey* every Year, so that the Names of every Sort now known in *England* would rather be troublesome than instructive to my Reader. The best way will be for him to take a View of the several curious Collections of them in the Gardens about *London*, when they are in Flower; however that he may be the better apprised of what I design to treat of in this Section, I shall describe some few sorts of them. The *Ranunculus* bears its Blossom in *April* and *May* upon Stalks about six or eight Inches high; the double Flowering kinds are crowded with *Petals* after the manner of the *Province-rose Flowers*, and some of them as large; the Colours of those *Ranunculus's* I have seen are deep *Scarlets* vein'd with *Green* and *Gold* Colours, *Yellow* tip'd with *Red*, *White* spotted with *Red*, *Orange* Colours, plain *White*, *Yellow* with *Black*, and one sort of a *Peach* bloom Colour; which yet I have only seen at Mr. *Blind's* at *Barns* in *Surry*. The single kinds blow somewhat taller than the others, and are commonly Variegated with pleasant Colours; all these are increas'd by Off-sets found about the Roots when they are taken up, and

and may likewise be propagated from *Seeds* saved from the single Kinds and Semi-doubles; but as they rarely ripen in *England*, we have hitherto been beholding to the *French* for them. The proper Season for sowing the *Seeds* of this *Plant* is the latter end of *August*, and the Soil which they most delight in is *rotted Leaves*, or such Soil as may be taken from the Surface of the Earth in Woods or Groves of long standing.

TANNERS-BARK, or the bottom of a *Wood-pile*, are likewise very proper Earths for these *Flowers*, if they are well sifted and mix'd with one third part of Natural Soil. These *Plants* are somewhat tender and require some Shelter in the Winter; especially if they have begun to spring before the Frosts. The Seedling *Plants* come up the Spring after they are sown, and blossom the second Year; when they are out of *Flower*, and the *Stalks* and *Leaves* are decay'd, their *Roots* should be taken out of the Ground, and being well dry'd in the Sun, must be preserv'd in dry Sand till the latter End of *September*, which is the best time for re-planting them, if the Ground be not over wet.

SECT. III.

Of ANEMONIES.

OF this Kind of *Plant* there are many Varieties, as well with *single* as with *double Flowers*. Their Colours are chiefly *Reds*, *Blues*, and *Purples*; their Blossoms, which are seldom above five or six Inches from the Ground, open themselves about *April*, and if the *Roots* are suffer'd to remain in the Earth, they will again repeat their *Flowers* in *September*, and continue blowing the greatest part of the Winter; but it is seldom that the Gardeners will leave any of their choice *Anemony Roots* in the Earth, after their Spring Blossom is over, lest they decay by too much Wet, which is frequent enough in our Climate in the Summer Season. The *Roots* of these *Plants* should be taken out of the Ground, and preserv'd and replanted, like those of the *Ranunculus*, with this Difference only, that *Anemony Roots* should be increas'd by breaking the *Knots* asunder,

der, which are about the Bigness of a small Button, and Planting them after they have lain two or three Days in the Sun. These *Flowers* love a sandy Soil without any Mixture; chiefly such as is found about *Batersea* in *Surry*, where they blow very large. The Seeds of the *single* Kinds ripen about the latter end of *May*, and should be carefully gather'd as soon as they begin to crack or show their *Down*, otherwise the least Wind will carry them away. From them we may raise innumerable Varieties, if they are sown in *February*, and lightly cover'd with Earth. They blow the second Year after sowing.

SECT. IV.

Of the JONQUIL, NARCISSUS POLYANTHOS, and others of the same Tribe.

THE *Jonquil* is a Flower generally admir'd for its delightful Scent; the *double* Kind blossoms in *April*, and that with the *single* Flower somewhat sooner; the *Roots*, which are *Bulbous* like those of the *Tulip*, love a light sandy Soil and open Exposure; they should be taken out of the Ground and replanted like other *Bulbs*; and in like manner should be order'd the *Narcissus Polyanthos*, whose sweet scented Flowers are not less desirable than *Jonquils*. These, with all other Kinds of *Narcissus*, are propagated from *Off-sets* of their *Roots*. Next to those I have mention'd in this Section, the *double White* and *double Yellow Narcissus* are worthy our Esteem; and even the common *Daffodil* is to be admir'd for its pretty Ornament in rural Parts of the Garden. All these Blossom in the Spring about a Foot high.

SECT. V.

Of the HYACINTH.

THERE are many Kinds of *Hyacinth*, some with *single* Blew Flowers, and others with *single* White Flowers, and with *double* Flowers of both those Colours; the *Grape Hyacinth* and *Starry Hyacinth* have also their Varieties, all which as well as the *Hyacinth* of *Peru*, will bear the Severity of our Frosts; all of them, except the last, blow early in the Spring, and are most of them well

well scented; they are increas'd from *Off-sets* of the *Roots* planted in *September* in *Beds* of sandy Soils the *Flowering-stems* of these *Plants*, are seldom more than half a Foot high from the Ground.

SECT. VI.

Of the CYCLAMEN or SOW-BREAD.

I Have seen near thirty sorts of this *Flower* in the *Amsterdam Gardens*, but in *England* we have not above four sorts, viz. the *Spring*, *Autumn*, and *Winter* blowing Kinds, with *Pink-colour'd Flowers*, and the *Sweet-scented White-flowering Kind*. The last is somewhat tender, and rarely found in our *Gardens*; but the other sorts, which are hardy enough to stand abroad all the Year, are pretty common. These are rather *Turnep-rooted Plants* than *Bulbs*, and are only propagated from *Seeds* sown as soon as they are ripe, which indeed are more like *Roots* than *Seeds*. These *Plants* are Beautiful as well in the *Variegations* of their *Leaves* as the delightful Colour of their *Flowers*, they love a light Soil, and can only be transplanted with safety about *Midsummer* when their *Leaves* are decay'd; their *Blossoms* seldom rise above four Inches from the Ground; and we may lay it down as a Rule, that all *Bulbs* may be safely transplanted when their *Leaves* and *Flowers* are decay'd.

SECT. VII.

Of the GUERNSEY-LILLY.

THE *Guernsey-Lilly* has hardly its Equal for Beauty, among the *Flowering Race*; and yet it is rarely found in our *Gardens*, which may be perhaps for want of a right Knowledge of its Culture. Mr. *Fairchild* of *Hoxton* has this *Plant* Flowering with him every *Autumn*, even from *Off-sets* taken from the great *Roots*; the *Blossoms* are large, and not unlike those of the *Lilly* in their Make; seemingly powder'd with Gold-Dust upon their *Rose-colour'd Petals*. The most proper Soil for this *Plant* is two third Parts of Sea Sand to one of Natural Soil, or a light sandy Earth mix'd with an equal Quantity of Rubbish. It will bear the Hardships of

of our Winters, if it be planted in either of the foregoing Soils under a warm Wall; but chiefly, if it be kept dry. The *Flower-stems* of this *Plant* are commonly about a Foot high.

SECT. VIII.

Of the GLADIOLUS, FRITILLARIES, and IRIS.

THE *Gladiolus* or *Corn-flag* blossoms in *May* upon *Stalks* of almost two foot high; the *Flowers* are of a *Rose Colour*, and last about six Weeks; the last time to transplant them, is when their *Stalks* are decay'd. The *Fritillaries* are of several Kinds, blossoming in *April*; their *Flowers* are chequer'd with two or three Colours, sometimes *White* and *Red*, others are *Green* and *Brown*, or *Yellow* and *Black*; they are curious *Plants*, and at this time of great Value in *Holland*, where vast Varieties have been lately raised from Seeds, and are very proper (like other *Bulbs*) for *Parterres*. The *Iris* is likewise a numerous Tribe, some Sorts of them blossoming in *April*, others in *May* and *June*; their *Flowers* are of several Colours, and their Figures different; they are all of them pretty Ornaments for Gardens, and may be increas'd by *Off-sets* taken from their *Roots* when their *Stalks* are decay'd. These, like other *Bulbs*, love a light Soil.

SECT. IX.

Of the COLCHICUM, and CROCUS.

THE *Colchicum* has a Root somewhat like the *Bulb* of a *Tulip*, but its *Flower* resembles that of a *Crocus*; there are many Kinds of *Colchicums*; those with single *White*, and *Pink-colour'd Flowers*, some with double *Pink-colour'd Blossoms*, and another Kind with *Flowers* chequer'd with *Pink Colour* and *White*: All these blossom in *August* and *September*, about four Inches above Ground; they delight in sandy Soil, and will only bear transplanting about *Midsummer*, when the *Roots* are entirely at rest. The *Saffron Crocus* blows at the same time with the *Colchicums*, bearing *Purple Flowers* of the same Height and Bigness; this *Plant* is of great Use (as well as Beauty) for the Sake of its *Pistillum*, which is the *Saffron* us'd in *Medicine*. I have

have often wonder'd that this *Plant* is not more commonly cultivated in our Gardens, seeing how valuable a Commodity it produces; besides the Pleasure of its Blossoms at a Season when very few Flowers appear. This is one of the last kind Offices of the departing Summer, and should be taken notice of. The *Leaves* appear so soon as the Flower is past, and remain all Winter, which in the Spring should be ty'd together in Knots to help the Increase of the *Roots*, which will be fit to remove or transplant about *Midsummer*. This *Plant* chiefly delights in Chalky Ground, but will prosper also in a sandy Soil. The Way of preparing the *Saffron* for Use should have been inserted in this Place, but at present I have only an imperfect Account of it; and therefore shall defer it 'till some curious Person in that Art has been pleas'd to communicate to me a more exact Receipt for its Management than what I have now by me, which I shall gratefully acknowledge. The several Kinds of *Crocus*, which blossom in the Spring, are the common *Yellow* and *Black strip'd*, the *Yellow Dutch*, the early and later *Purples*, and the *White Sort*; all these blossom about *February* and *March*, and make the best flowering Edgings of the Spring; the *Roots* may be taken out of the Ground in *June*, and re-planted with other *Bulbs*. They are increas'd by *Off-sets*, and love a light Soil.

SECT. X.

Of the *Snow-Drop*, *Winter-Aconite*, *Dens-caninus*, and *Orchis* or *Satyrion*.

THE *Snow-drop*, altho' it is a common Flower, should not be wanting in *Parterres*; it is so fit a Companion for the *Crocus*, as well in Respect to its Height, as time of flowering, that it has been customary to plant them together; their Culture likewise is the same, so that one trouble of the Gardener will serve for the Propagation of both; as likewise of the *Winter Aconite*, which is also one of the first Leaders of the Spring, beginning to display its pretty *Yellow Blossoms* about the first Week in *January*; the *Roots* of this Sort of *Aconite* are not so regular in their Shape as the *Bulbs* of the *Crocus*, nor so mis-shapen as the *Roots* of *Anemonies*,

Anemonies, they are so small 'tis hard to find them when the Leaf is decay'd. This Kind of *Aconite* will soon over-run the Ground where it is planted, as well by shedding its Seeds, as from *Off-sets*, which its Roots freely put forth; the Flowers of it are never more than three or four Inches above Ground. The *Dens-Caninus*, or *Dogs-tooth'd Violet*, is another Dwarf like the former, it produces its Blossoms in *March* of a *White Colour*, somewhat tinged with *Purple* like the Blossoms of the *Spanish Jessamine*; this Plant must be propagated like the others I have mention'd in this Section, and like them loves a sandy Soil. The *Orchis* has many Varieties, which may be found in every Herbal, I shall mention only three or four Sorts which are commonly cultivated by the Curious, such is the *Bee-flower*, the *Fly-flower*, the *Lizard-flower*, and a more common sort found in Meadows with *Purple-flowers*; these should all be removed with Balls of Earth about their Roots, just when their Flower-stems begin to appear above Ground; they blossom about half a foot high in *May*.

I shall now conclude this Chapter of *Bulbous-rooted Plants*, with acquainting my Reader, as a certain Rule which he ought to observe, That *Bulbs* are taken out of the Ground every Year, only for the Preservation of the Variegations of their Blossoms, but such as are not admir'd on Account of their Stripes should be left standing in the Earth at least three Years, for the Benefit of their Increase; and also that the most safe time of removing *Bulbous Roots*, is when the *Leaves* are decay'd.

C H A P. VIII.

Of ANNUAL-FLOWERS, and PLANTS, their Culture and Management in Gardens.



THE Plants which I shall treat of in this Chapter are of that Nature, that the Method of Culture proper for one or two of them will be sufficient to inform my Reader of the right Way of managing all those which may be comprehended under the Denomination of

of *Annuals*: In short, the curious Planter has no more to do, than provide a Hot-bed about *February* or *March*, for the Seeds of the most tender Kinds of *Annuals*, and to prepare the Soil of his Natural Garden Beds for the interring the Seeds of the most hardy sorts about the middle of *March*, and that he may with more Ease be inform'd of the several Kinds which are now commonly used for the Beautifying of Gardens, I shall give him an Account in two separate Sections or Tables, of their Names, Stature, particular Beauties, and Times of flowering.

SECT. I.

Of *ANNUALS* to be rais'd in a Hot-Bed.

THE *African Marygold* has a large double *Yellow* Flower, blowing above two foot high, in *May*, *June*, *July*, *August* and *September*.

II. The *French Marygold* has a smaller Flower than the former, *Yellow* intermix'd with *Red* near two foot high, blossoming from *May* to *September*.

III. *Sweet Sultan*, three Sorts, with *White*, *Yellow* and *Purple* Flowers, they smell like Musk, and blossom two foot high, from *June* to *September*.

IV. *Capsicum Indicum* or *Guiny Pepper*, with long and round *Scarlet* Fruit, for which it is only admired, begins to make a handsome Show in Gardens about *July*, and lasts 'till *September*; this Plant is about a foot and half high. The common People in *Italy* pulverise the *Yellow* Seeds contain'd within the *Pods* of this Plant, and use it instead of *Pepper*, and the late Bishop of *London* frequently eat of it in the same Way.

V. *Marvel of Peru*, two Sorts, one with *Red* and *Yellow* Flowers, the other *Purple* and *White*, these blow from *July* to *September*, two foot high.

VI. *Amaranthus* of several Kinds, but the best of them are the *Tricolour* and *Cockscomb*; the first is only beautiful in its *Leaves*, which are variegated with *Scarlet*, *Yellow* and *Green*; the second is admir'd for its *Scarlet* Flowers like *Cockscombs*. These are ornamental Plants from *July* to *September*, growing about two foot high.

VII. Con-

VII. *Convolvulus*, three Kinds, the *Major* with a *Purple* Flower, the *Minor* a *blue* Flower, variegated with *Yellow* and *White*, and the *Scarlet* flowering Kind; these blow from *June* 'till *August*, and creep upon the Ground.

VIII. *Female-balsam's*, three Sorts, the *Rose* Colour, the *Purple* and the *White* Kinds; these blossom about a foot and a half high, from *June* 'till *September*.

IX. *Belvidere* or *Pyramid-bush*, a pretty *Green* without Flowers, about two foot high.

X. *Bush-basil*, a small *Shrub*, about a foot high, with *sweet scented Leaves*.

XI. *Nasturtium Indicum*, or *Indian Cresses*, two sorts, one large, the other small, has *Flowers* variegated with *Yellow* and *Scarlet*, they run upon the Ground, and blow from *May* 'till *September*.

XII. THE *Sensitive-plants*, two sorts, one of which is call'd the *Humble-plant*, because the *Leaves* of it fall down to the Ground upon the Approach of a Man's Hand, and the *Sensitive-plant* curls up its *Leaves* by touching it; these two must be constantly kept under Glasses all the Summer.

I must beg the Reader's Pardon, if I introduce the *Tuberose* among the *Annuals* of the Hot-Bed, which every one knows to be a bulbous Plant of *Italy*, but as it is *Annual* with us, I hope to be excus'd; the *Roots* of it must be planted in the Hot-bed with the other Plants of this Section, and must be kept from Water 'till the *Leaves* begin to put forth. In *July* and *August*, their Flowers appear upon *Stems* of three foot high, which afford a most agreeable Scent.

FOR the more particular Management of the Plants I have here mention'd, my Reader must take notice, that when the Seeds are come up, the young Plants should be transplanted at four Inches Distance from each other, and should not quit the Hot-bed 'till the second Week in *May*; they will then bear the Air of our Climate, if they have by Degrees been used to it.

SECT. II.

Of ANNUAL PLANTS to be sown in the Natural Ground.

THE Seeds of those Flowers I shall treat of in this Section must be sown in the Natural Earth in *March*, on the very Places where they are to blow, whether for Standard *Plants*, or in Spots, or for Edgings.

The *Annual Sun-flower* blossoms from *June* till *August*, with large *Yellow* Blossoms upon *Stems* of six Foot high.

II. The *Larks-beel* should be sown in Spots, it blows with several Colours upon *Stems* of three Foot high, from *June* till *August* or *September*.

III. *Flos-Adonis*, sown in Spots, blows a Foot high in *June* and *July*, with small *Crimson* Flowers.

IV. *Nigilla Romana* blossoms in the same Month with the former, it bears a *Blue* Flower, about a Foot and half high.

V. *Garden Poppys* should be sown in Spots, their Colours are various, and their Flowers very beautiful, but not lasting; they appear in *May* and *June* upon *Stalks* about two Foot from the Ground.

VI. The *Dutch Poppy*; this does not blow so high as the former, its Flowers are *Red* and *White* strip'd, blossoming from *June* till *August*.

VII. *Cyanus*, or *Annual Bottles*, are of several Colours, blossoming in *June* and *July* upon *Stalks* of a Foot and half high.

VIII. *Lupines*, three sorts, the great *Blue*, small *Blue*, and *Yellow* Flowering Kind; all these blossom in *May* and *June*; the first about two Foot high, and the others little more than half that Height; the *Yellow* have a pleasant Scent.

IX. *Scarlet-beans* are twining Plants, bearing Knots of *Scarlet* Flowers from *May* till *September*.

X. *Everlasting Flowers* sown in Spots blossom about a Foot and half high in *June*, *July* and *August*; their Flowers will remain fresh for many Years after they are gather'd, and are dy'd of several Colours by curious Persons for Flower-Pots in the Winter.

XI. *Wing'd*

XI. *Wing'd Peas*, sown in Drills for Edgings, have pretty *Crimson Blossoms*, blowing about six Inches high in *May* and *June*.

XII. *Annual Stocks* for Edgings, or sown in Spots, blossom in *May* and *June*, bearing their Flowers of a *Pink Colour*, about six Inches high.

XIII. *Venus's Looking-Glass* is proper for Edgings, or to be sown in Spots; it blossoms the same Height, and at the same Time with the former, bearing Flowers of a *Violet Colour*.

XIV. *Venus's Navelwort* has *white Flowers*, is a pretty *Dwarf Plant* fit for Edgings or Spots, and blossoms also with the foregoing *Plant*.

XV. *Candy Tufts* are of two sorts, one with *White*, the other with *Red Flowers*; they are both proper for Spots, or Edgings, and flower with the former.

XVI. *Hearts-ease*, or *Viola tricolor*, has its Flower variegated with *Purple*, *Yellow* and *Red*, it is a *Dwarf* like the last, and makes pretty Edgings. This also blossoms in *May* and *June*.

I have now no more to do than to remark, that all the *Annuals* I have mention'd in this Section will blow sooner or later as their Seeds are put into the Ground, and I would advise the Curious to sow some of their Seeds in every one of the Summer Months, if they would have them succeed one another in Flowering; but the *Dwarf* kinds especially.

I shall here give him a Design of a Garden-bed divided into five Parts, * the Middle Line A is proper for the tallest *Plants* mention'd in this Treatise, the Lines BB for the Middle *Plants*, and those mark'd C C for the Lowest; in all which Divisions of the Bed, he should contrive to allot one third Part for *Perennial Plants*, one third for *Bulbous-rooted Plants*, and the like Proportion for *Annuals*, considering at the same time what Months in the Year each *Plant* will blossom in, and assort them in such manner that all do not Flower together, or at one time, but that an agreeable Mixture of Flowers may continually be found in the Garden, succeeding

* Fig. II. of the third Plate.

ceeding one another so long as the Season will permit, and this he may easily perform by the Assistance of these Papers.

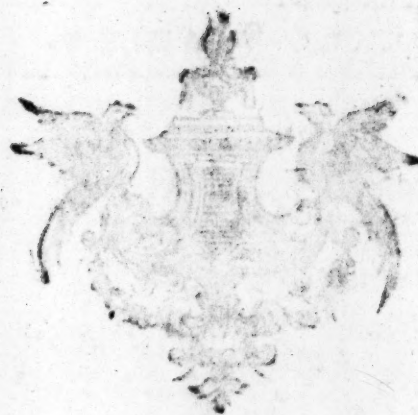
SUBJECTS of this Nature cannot be more easily divided than in the Method I have followed, and in the next and last Part I propose to treat of the Improvements of *Fruit-Trees*, *Kitchen-Gardens*, and *Green-house Plants*, all which I shall advance something New upon, and must repeat the same Desire I have before done to the *Curious*, to Communicate the Observations that fall in their way upon the particular Parts of *Planting and Gardening*.

F I N I S.



G

21 MAY



3

GE
K

W

Ki

GE

D

T

Af

Pr

THE
GENTLEMAN and GARDENER'S
KALENDAR,

DIRECTING

What is necessary to be done every MONTH,
IN THE

KITCHEN-GARDEN, FRUIT-GARDEN,
NURSERY,

Management of *Forest-Trees,*

GREEN-HOUSE, and FLOWER-GARDEN.

WITH

DIRECTIONS for the Making and Ordering
HOP-GROUNDS.

By RICHARD BRADLEY, F.R.S.

To which is added,

The Design of a *Green-House,*

(Finely Engrav'd,)

After a New Manner, contriv'd purposely for the
good keeping of EXOTICK PLANTS, by Seignior
GALILEI of Florence.

DUBLIN:

Printed by and for GEORGE GRIERSON, at
the *Two-Bibles*, in *Essex-Street*. M.DCC.XX.

THE
GENTLEMAN and GARDENER'S
KALENDAR

DIRECTIONS
FOR THE
MANAGEMENT OF THE
GARDEN, HOUSE, and LANDS

WITH
DIRECTIONS for the PLANTING and ORDERING
HOT HOUSES.

By RICHARD BRADLEY, Esq.
To which is added
The DESIGN of a GREEN-HOUSE
(With Figures)
And a New Manner, contriv'd especially for the
good keeping of EXOTICK FRUITS, by SIG:
CALLEBAUT, of Antwerp.

DUBLIN:
Printed by and for GEORGE GARRISON, at
the 'Three-Bells', in New-Street, M.DCC.LXXV.

P



ters of
View
and p
the E
that
and
plain
pacity
neces
fect o
but i
nume
scrip
M
of th
well
Hou
Fore
In
the
nabl
I ha
my



THE P R E F A C E.

SINCE the World has been so good-natur'd as not to despise my first Endeavours upon the Subject of Planting and Gardening, I hope this little Tract will meet with no less Favour than my former Papers : as it contains many Matters of Fact, which yet have not been expos'd to the publick View, it may possibly tend to the Improvement of Gardens, and put many Curious Persons upon further Discoveries, to the Encrease of their Pleasure and Profit. It is my Desire that every one may reap some Advantage from what I do, and I have therefore laid down the following Rules, in as plain and easie a Method as possible, so that the meanest Capacity may understand them; and if I have omitted any thing necessary to be set forth in such a Work, it is rather the Effect of my little Leisure, than for want of a willing Mind; but I am perswaded the Omissions of that Kind are not so numerous, but that they are over-balanc'd with other Prescriptions, which are not commonly known.

My Design in this Kalendar is to remind the Gardener of the Business he is to do in every Month of the Year, as well in the Kitchen-Garden, Flower-Garden and Green-House, as in his Hop-Ground, Nursery and Plantation of Forest-Trees.

In the Front of every Month I have endeavour'd to give the Gardener some Account of the Weather he may reasonably expect; and tho' it may vary in some Points from what I have said of it, yet generally it may be found to agree with my Relation, and I think it is not unreasonable that every

Lover of Gardens should be a little appriz'd of it, seeing how much the Business of every Month depends upon it; for it would be improper to do some Works in dry Weather, others in Wet, and others would be impracticable in Frost and Snow; besides, to have some guess when the Season is most inclinable to Tempest, or when it is most subject to Blights, will make us guard betimes against those Evils.

In the next place I have carefully set down the Products of the Garden in such a Manner, as will readily inform us what Herbs, Roots, Fruits and Flowers are in Perfection at any time of the Year, which I conceive will be no small Help to such as have large Families, or make great Entertainments. And that there might be nothing wanting to make this Work as compleat as possible, I have added the Design of a Green-House, after a new Manner, chiefly contriv'd for the good Keeping of Exotick Plants in the Winter, which with the Assistance of Seignior Galilei, a very skilful Architect of Florence, is, I think, no less beautifully adorn'd, than any Building I have seen, where the Architect has not been confin'd in his Fancy.

As to other Matters related in this Work, which are new, and a little out of the common Road of Gardening, I desire they may not be condemn'd before they are try'd; Experience will soon satisfy the Curious, that I have not recommended any thing as Matter of Fact, which is not so; and if by any Mistake of the Person who tries what I prescribe, the Experiment does not justly answer his Desire, I shall not grudge at any time to give him a more perfect Explanation of the Method he ought to take, either by Letter or otherwise.

Some very Curious Gardeners, out of a Desire (as I suppose) of Improving themselves in the Knowledge of Nature's Works, have objected against one Thing in particular, mention'd in my New Improvements, Part I. Page 4. which relates to the Budding the Strip'd Jessamine upon the Common Sort, and by that Means making the whole Plant, or many Parts of it, become strip'd, from the unwholesome Tincture communicated to the Plant from the strip'd Bud; this they affirm is not so, as it is related either by Mr. Lawrence, or my Self; but I conceive their Objection rather proceeds from the Desire they have to be convinced of the Certainty of the Thing, than from any Ill-nature; therefore,

that

The P R E F A C E.

iiij

that I may not be wanting to them to give full Satisfaction of the Truth of what is alledg'd, relating thereto, by the Worthy Gentleman above-mention'd, as well as what I have also affirm'd concerning it, I refer them to the Garden of the Ingenious Mr. Thomas Fairchild at Hoxton, and that of Mr. Furber at Kensington, where they may be Eye-witnesses of above Twenty Plants, now growing, of the Common White Jessamine, which are variegated by the same Means, and after the same Manner as is related in the Clergy-man's Recreation, and my Book of Gardening.

There is one Thing so notorious, that I cannot pass it by unobserv'd, and that is, the Indiscretion which too many are guilty of, when they walk in fine Gardens, in gathering of Flowers and Fruits unskilfully, which proves oftentimes prejudicial either in the Loss of the Seed of a good kind of Flower, the Loss of an Experiment perhaps, or a Damage to the Tree the Fruit is torn from; and I the rather mention this publickly, because many Gentlemen, who have fine Gardens, have often complain'd of this Breach of good Manners in their Neighbours, without being capable of redressing the Grievance they lay under: I'm sure no Body can reasonably take this amiss from me, since every one must needs be sensible, this Inadvertency has many times destroy'd a valuable Plant, and given Uneasiness to a good Friend.



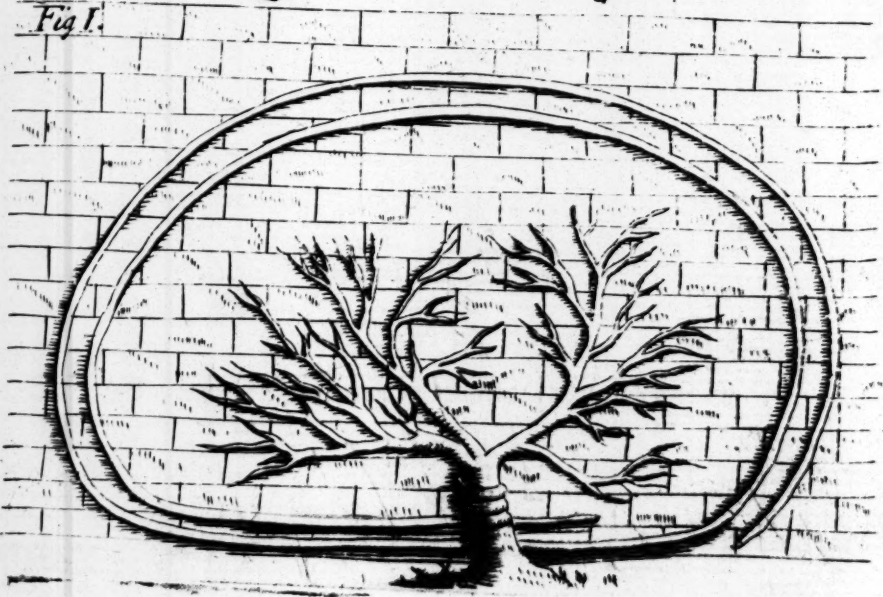
Monthly



Plate I.



Fig. I.



and
chi
cun
aft
tak
and
Lin
Ho
the
the
the
fin
the
rou



Monthly DIRECTIONS
FOR
Ordering the *Kitchen-Garden*,
And for the Management of
FOREST-TREES.

JANUARY.



THIS Month is commonly frosty, and, if we have any great Snow in the Course of the whole Year, it is about this time. In this Month the *Thames* has been three times frozen within the Space of forty Years; and it is observable, that the most piercing Cold reigns chiefly at this Season: Therefore whatever is nice and curious in our Gardens, must now be diligently look'd after, especially those Plants which are in Hot-beds, by taking proper Means to defend them from the cold Air, and covering the Glasses a little before Sun-set with Litter and Mats.

If a Gardener has any *Cucumber* or *Melon* Plants in his Hot-bed, he must be careful to give them Sun through the Glasses at every Opportunity, the better to keep them from the Injuries they will be apt to receive from the Steam of the Bed; for the Steam of the Dung rising in great Quantity at this Season, condenses upon the Glasses, and then dropping upon the tender Plants, rots them.

This

This injurious Steam may be corrected two Ways, *First*, By allowing at least six Inches thick of Earth to cover the Dung; and *Secondly*, By contriving Frames of Woollen Cloth to slide in under the Glasses, which will receive the Steam that arises in the Night, and may be drawn out and dry'd every Morning without any Injury to the Plants.

The Damps being corrected in this Manner, the Heat of the Beds may be recruited or preserved, by laying hot Dung to their sides, every fifteen or twenty Days.

Sow *Cucumber* and *Melon Seeds* on the Hot-beds every Week, lest by some Accident the first Plants are lost.

Sow small *Sallads* upon declining Hot-beds, viz. *Mustard*, *Raddish*, *Cresses*, and *Lettuce*, allowing them what Air the Season will permit when they are come up, for 'tis Air that gives them their right Taste.

Plant *Strawberries* upon a moderate Hot-bed, to make them bear Fruit betimes, but keep them not too tender.

If you have not yet planted any *Mint* upon Hot-beds, 'tis now a proper time to do it, that it may not be wanting in the *Sallads* of this Season.

Make a Hot-bed for *Asparagus*, to succeed that made in *December*. [See my *New Improvements*, Part III. p. 89.]

If the Weather be frosty, bring into the Garden such Manures as are necessary to enrich the Ground.

Continue to purge large *Orchard-Trees*, taking away the luxuriant Branches close to the Stem, and such as grow disorderly.

Towards the latter End gather *Clons* for Grafts from good bearing Trees, and lay them half Way in the Earth 'till Grafting Season; or, if they are to be sent to a remote Place, stick their Ends in Clay, and bind them together with a dry Straw-band.

It is now the best time to remove large Trees, if the Weather be frosty; for then the Clod of Earth about the Roots will remain entire without falling from them.

In open Weather continue to trench Ground, laying it in Ridges 'till you use it.

Now also is a good time to compose Earth, by mixing several Soils together of different Qualities, as Sand with

JAN. *for Ordering the Kitchen-Garden.*

with Clay, &c. for such Soils are to be covered before Dung, for *Trees* or other durable *Plants*.

Give fresh Earth to your *Sage*, *Thyme*, and other sweet Herbs, taking Care that their Roots are not disturbed.

Uncover the Roots of *Trees* that are too luxuriant, cutting off some of their large Roots, as well to curb their too great Vigour, as to prevent their too early blossoming.

If in the preceding Month your *Strawberries* have not been dressed with fresh Earth, that Work must be no longer delayed.

Towards the End, if the Weather be open, transplant all sorts of *Timber-Trees*, having first prepared the Places for them, by digging and loosening the Earth, and, if necessary, mixing it with different Soil.

In wet and heavy Ground, raise Banks of Earth a convenient Height to plant your *Trees* upon; but in dry sandy Ground that Labour may be omitted.

In planting of *Trees*, have due Regard to the Manner of the Roots, that those which naturally spread near the Surface be not planted too deep, but, as near as may be, imitate Nature in this and all other Garden-Work.

In planting *Trees* for *Timber*, always preserve the leading or upright Shoots of the *Trees*, pruning off only the Collateral Branches close to the Stem.

Chuse rather to plant small *Trees*, than those of a large Size; a few Years will reward your Wisdom in so doing; for where *Trees* have stood long enough in one Soil, to become large and stately, they are hardly to be reconciled to any other, tho' they could be transplanted without any Loss of their Roots.

Consider well the Soil and Exposure proper to each *Tree* you design to plant, and be not over hasty in cultivating any particular *Tree* you most admire, without the Place be agreeable to its Nature; for 'tis the want of such Consideration, which has confounded many chargeable Plantations.

Sow some *Hotspur Peas* to succeed those sown in November; also set *Spanish Beans* in the open Field.

Set Traps for Mice and other Vermin, which are now very busie about your young *Pease*, and those you have newly put into the Ground.

Plant *Cabbage*, *Turnips*, *Parsneps* and *Carrots* for Seed.

Make up and enrich your *Hop-Hills*, allowing the Space of six Feet between the Centers of the Hills, raising each Bank a Foot higher than the Paths if the Ground lie wet, or about half as much if it be dry; make them flat on the Tops, and about two Feet over, working the Earth very fine to prepare it for planting the next Month; but if the *Hop Garden* is already made, it is now the Season to lay Manure about the Edges of the Hills, and to lay upon them a thin Covering of fresh Earth.

Products of the Kitchen-Garden in January.

CHARDONES are yet in great Perfection.

Roots preserved in Sand, which are now in Use, are, *Carrots*, *Parsnips*, *Beets* both Red and White, and *Potatoes*, with some *Skirrets*.

Roots yet remaining in the Ground, are *Scorzonera*, *Turneps*, *Horse Raddish*, and some young *Carrots* which were sown in July.

The Roots kept dry in the House, are *Onions*, *Garlick*, *Shallots*, *Rocambole*.

We have yet some *Artichokes* in the House, which were preserv'd by setting their Stalks in Sand.

Herbs for boiling are *Boor Cole*, *Savoy Cabbages*, *Sprouts of Dutch* and *Battersea Cabbage*, Red, and the *Russia Cabbage* and *Spinach*.

Herbs for Soup and other Kitchen Uses, are, *Parsley*, *Sorrel*, *Chervil*, Leaves of the *White Beet*, *Leeks*, *Thyme*, *Sage*, *Winter-marjoran*, *Clary*, *Sellery*, and by some are used the Tops of *Green Pease* and of *Asparagus*.

Dry'd Herbs for Household-Use are *Mary-gold-Flowers*, *Sweet Marjoran*, and dry'd *Mint*.

Sallads for this Month are composed of the Tops of *Mint*, young *Cresses*, *Mustard*, *Raddish*, young *Lettuce*, young *Onions*, *Sellery* and *Endive*, the Tops of *Burnet* and *Chervil*; to which Mixture we may add a *Cabbage Lettuce* preserved under Glasses, or some of the *Dutch Brown*

FEB. for Ordering the Kitchen-Garden.

Brown Lettuce, which was sown abroad at the end of *August*, and is now a little curl'd and very agreeable among *Sallad Herbs*.

We have Plenty of *Asparagus* upon the Hot bed made for that Purpose in *December*.

Works to be done in the Kitchen-Garden in FEBRUARY.



HIS Month has been commonly reckoned the wettest in the whole Year: And I have observed, we rarely have any lasting Frost begin at this Season; but have taken Notice, that when *January* has given us a good share of Frost and Snow, the Weather in this Month is commonly warm and pleasant, and if that happen, 'tis an admirable Time for planting of Trees, either for Fruit, Timber, or Ornament, if those Works were not compleated in *September* and *October*.

Elm Sets should now be gathered from the Roots of large Trees, and planted in Nursery-Beds, and young Plantations provided of all sorts of *Forest-Trees* and *Shrubs*, which are propagated from Slips or Layers.

Set *Acorns* of the *Ilex*, *Cork-Tree* and *English Oak*, *Chestnuts* and *Walnuts*, and sow the *Samara* of the *Elm* and *Bay-Berries*, all which come up the first Year.

Sow the Mast of the *Asb*, *Beech*, and such other Timber-Trees as has been prepared a Year in Sand, for else they will be two Years in the Ground; as also the Berries of the *Hawthorn*, *Yew*, *Holly*, and such *Evergreens* prepared as above.

What I here mention concerning the preparing of Seeds in Sand, is the common Practice of the Gardeners; but I am informed by Mr. *Furber*, a Nursery-Man at *Kensington*, that he sow'd *Holly* and *Yew-Berries* which were two Years old, and had not been prepared that Way, which came up the first Year without difficulty: And he adds, that he gather'd *Asb-Keys* in the Spring, and sowed them immediately, and they came up in like manner, which I have done with the like Success, but was not acquaint-
ed

ed with the Meaning of it, till he told me the Reason, which is, that the *Ash* will frequently hold its *Keys* two Years without letting them drop, and at that Age they are prepared of themselves to grow without any Artifice.

Another has told me, that *Holly-Berries* being gathered and laid in a large Heap in the House, without stirring them till Spring, then those which lie in the middle of the Heap will not only be void of their Pulp or fleshy Part, but be sprouted, and then being immediately sown, will come up in a Month's Time. This may happen perhaps from the Ferment which the Berries would raise when they began to sweat; and it is from the same Reason I have recommended the Tryal of the Bran and Water, in my *New Improvements*, Part II. p. 6. which see.

Prune and nail your *Apricots* and other Stone-Fruit at the beginning of the Month, and last of all your *Nectarine*.

About the middle of the Month sow *Beans*, *Pease*, *Parsley*, *Spinach*, *Carrots*, *Parsnips*, some *Turneps*, *Scorzanera*, *Onions*, *Leeks*, some of the *Dutch Brown Lettuce* and *Raddishes*.

Sow *Skirrets* in light, rich Ground, where they may have some Moisture. It is held by some, that when their Roots are about two Inches long, they should be transplanted to make them large.

Plant *Garlick*, *Shalots*, and *Rocambole*, for Increase in light Ground.

Set *Potatoes* and *Jerusalem Artichokes* in heavy Ground.

Transplant young *Cabbage Plants* for a Crop, if that Work was not done in the preceding Month.

Sow *Asparagus Seeds* in the natural Ground.

Towards the End begin to graft in the Cleft, *Apples*, *Pears*, and *Cherries*.

Renew the Heat of your Hot-beds with fresh Dung, and continue to sow *Cucumbers* and *Melons* every ten Days, for fear of Danger from the Weather.

Now also make a Hot bed for all sorts of Annual Seeds, except *African* and *French Marygolds*, which may remain unsown till the next Month, otherwise they would

FEB. for Ordering the Kitchen-Garden.

would grow too big for the Frames, before the Weather would permit them to stand abroad.

Sow some of the *Battersea Kidney Beans*, upon a Hot-bed, to have *Beans* in *April*, and raise some *Purslane* upon Hot-beds.

Now it is a proper Time to make a *Mushroom Bed* of long Dung, covering it with Straw or Litter, at least eight or ten Inches thick; (See Directions for this Work in my *New Improvements*, Part III, p. 77.) and be sure to water it well three times in a Week, till the *Mushrooms* begin to spring, which will be in two Months time after making the Bed, if the Dung is not cover'd too thick with Earth.

Plant *Hops* this Month, seven Plants on each Hill, observing that each Set or Plant has not more than two Joints, for if they were to have a greater Number, the Shoots would be too weak.

Now make a large Hot-bed for forward *Raddishes* and Spring *Carrots*, which may be sown together, for the *Raddishes* will be fit to draw in *March*, and be quite gone before the *Carrots* begin to swell: This Bed must be cover'd about eight Inches with Earth, and defended from the Weather with Mats supported upon Hoops, for Frames and Glasses would draw the *Carrots* too much into Leaf.

Sow some *Collyflower Seeds* towards the middle of the Month upon some declining Hot-bed.

Towards the End sow *Parsley* in the natural Ground.

Make Plantations of *Strawberries*, *Rasberries*, *Gooseberries*, *Currants* and *Roses*.

Plant yet *Vines* and *Figs*, *Honeysuckles*, *Jessamines*, &c.

Product of the Kitchen-Garden in February.

WE have yet some *Chardones*.

We have still some *Turneps*, *Parasnips*, *Beets*, *Potatoes*, *Skirrets* and *Scorzonera*, with some young *Carrots* sown in *July*.

Asparagus in Hot-beds now much better than in the preceding Month.

The Herbs for Kitchen Use are those mentioned in *January*.

Herbs

Herbs for boiling are *Red Cabbages*, *Sprouts of Cabbages*, and some few of the *Savoy Cabbages*, *Spinach*, and the *Leaves of the White Beet*.

Sallads of this Month consist of the same small Herbs as in the preceding, but we may now add *Water-Cresses* and blanch'd *Dandelion*.

The *Cucumbers* sown in *October*, if they have withstood the Rigour of the *January* Frosts, will towards the End yield us some Fruit, and the *Kidney-beans* which were sown at the same time, will now afford us Plenty of Beans.

Some *Cherries* are commonly ripe this Month, at Mr. *John Millet's*, a curious Nursery-Man at *North-End* near *Fulham*, and green *Apricots* may be now found at the same Place.

Works to be done in the Kitchen-Garden in MARCH.



HIS Month is generally attended with white Frosts in the Nights, sudden storms of Hail and Rain, and the Winds from the East and the North-East are now very hurtful to our blossoming Fruit-Trees. The Showers which fall at this Season wound and bruise such tender Plants as stand abroad, so that a Gardener must now be very watchful to defend and shelter his Trees and Plants from the Injuries of the Weather. The Sun has now great Power over Plants, when it is not interrupted by Storms; and the piercing Winds concurring with the hot Gleams which are now frequent, scorch and rivel the tender Shoots of such Plants as now begin to sprout, unless they be happily guarded. All young planted Herbs or Trees should be carefully water'd, altho' we have many brisk Showers at this time, for they reach not deep in the Ground; and we must observe, that whatever we water now, must be in the Morning, for else the Frosts coming too suddenly upon the new water'd Plants, would chill their Roots.

If we have omitted any of the Works directed to be done in the former Months, they must not any longer be delay'd, for by the End of this Month our Garden ought to be compleatly crop'd.

Con-

MAR. for Ordering the Kitchen-Garden.

5

Continue to sow *Raddish*, and *Silefia*, *Imperial* and *Cabbage Lettuce* among all the Crops you put into the Ground, for they will come to Perfection, and be gather'd before the other Roots and Herbs cover the Ground.

Sow *Scorzonera*, *Salcifie*, and slip *Skirrets* of the last Year, leaving only the tender Fibres, and not any of the greater Roots about the Plants.

Sow *Pease* and *Beans*.

Make Plantations of *Mint*, *Balm*, *Pennyroyal*, *Thyme*, *Savory*, *Sage*, *Tanzey*, *Rue*, and other durable Herbs for Household Use, except *Lavender* and *Rosemary*, which will grow better if they are set in *April*.

Plant out some *Colly-flower* Plants to succeed those planted in *Autumn*.

Towards the middle rake and dress your *Asparagus*-Beds, for early in *April* the Buds will begin to appear above Ground, and therefore to delay this Work 'till the End of *March*, many Buds must then necessarily be broken off.

To make new Plantations of *Asparagus* in the natural Ground, first trench the Earth, and lay a good Coat of Dung at the Bottom of the Trench, and when the whole Piece is thus prepared and levelled, begin your Plantation, allowing ten Inches Distance between the *Asparagus* Plants, and four Lines of Plants in each Bed, leaving two Feet between the Beds for the Alleys, and then sow the whole with *Onions*.

Sow young *Sallads* in some warm Place, adding to the small Herbs of the last Month *Spinach*, *Rape*, and *Sorrel*.

Sow *Cabbages* and *Savoys* for a Winter Crop, and some *Sellery* for early blanching: Sow also some *Colly-flowers* on a declining Hot-bed.

Sow *Chardones* to transplant the next Month.

Now dress the *Artichokes*, leaving only three or four Suckers on each strong Root, slipping off the rest for transplanting and making good the Defects in the old Plantation.

Refresh the *Cucumber* and *Melon* Beds with hot Dung, and sow now for a full Crop.

H

Transplant

Transplant *Lettuce* for cabbaging, and to stand for Seed. Carefully stake up all new planted Trees, to defend them from the Violence of the Winds which now reign.

We may yet plant *Timber-Trees* of all sorts, watering them well as soon as they are planted.

Sow the Seeds of the *Scots Fir*, a Plant much neglected in *England*, but of admirable Use and quick Growth: They will thrive best in sandy Soil, somewhat wet, such as are most of our *Heaths* in *England*. The Roots run near the Surface, therefore they will not bear planting deep. If any affirm they will grow in a stiff Soil, I acknowledge it; but I am persuaded, whoever has seen them in one and the other sorts of Soil, will allow that the Ground I direct for them, is at least one third more Advantage in the Growth of the Tree, than the other.

Sow *Leeks*, *Beets*, *Chervil*, *Spinach*, *Fennil*, *Dill*, *Burnet* and *Sorrel*.

Sow *Endive* very thin, or it will run to Seed.

Divide the Roots of *Farragon*, and transplant the Slips about eight Inches apart.

Make young Plantations of *Chives*.

Towards the End sow upon the Hot-beds some *Purslane*, *Nasturtium*, *French* and *African Marygolds*.

Sow *Marygolds* in the natural Ground.

Be diligent this Month in destroying Weeds before they run to Seed; for should their Seeds once shed in the Garden, it is more than a Summer's Work to get them out.

In the *Hop-Garden* prune all the strong Leaders to two Joints apiece, and take away all the young Shoots close to the Roots, leaving only those which shoot from the old Wyars.

Products of the Kitchen-Garden in March.

THIS Month affords us very little Variety of Herbs for the Table, for now the Winter-Stores are almost spent, and the Roots which have been hitherto useful, are hard and stringy; and besides, an understanding Gardener must at this Season new crop his Ground

A P R
Groun
Montl
Th
young
Winte
The
Mieha
Red B
In t
beside
A
much
Mont
To
bed in
W
Mont
of wh
large
Ho
not m
Ri
great
At
upon
have
Heat
acco
T
Seed
them
gene

W

for t

APR. for ordering the Kitchen-Garden. 11
Ground with Herbs and Roots for the succeeding Months.

The only Herbs now good, are Sprouts of *Cabbages*, young *Cabbage-Plants*, or *Coleworts*, and some of the *Winter-Spinach*.

The Roots are *Carrots* sown in *July*, *Raddishes* of *Michaelmas*, some few *Turneps* that were sown late, and *Red Beets*.

In the Hot-beds we have *Kidney-beans* and some *Pease*, besides *Cucumbers* upon the Plants raised in *January*.

Asparagus upon the Hot-bed made in *February* is now much better tasted than what we eat in the preceding Months.

Towards the End, the *Raddishes* sown upon the Hot-bed in *February* will be fit to be drawn.

We may now add to the *Sallads* of the foregoing Month some *Purslane*, with young Tops of *Tarragon*, of which a few Leaves will serve to give a Relish to a large Sallad.

Hop Buds or *Tops* are now gathered to boil, and are not much inferiour to *Asparagus*.

Ripe *Cherries* and Green *Apricots* may now be had in great Plenty at Mr. *Millet's* before-mentioned.

At the End we have some *Scarlet Strawberries* ripe upon the Hot-beds, and also some few *Beans*, if we have had Courage enough to forward them by artificial Heats, but that Trouble and Expence rarely turns to account.

The Stalks and tender Sprouts of *Turneps* running to Seed, are now excellent after the Strings are taken from them; these in the Market are called *Lupines*, and are generally esteem'd one of the best boiled Sallads.

Works to be done in the Kitchen-Garden in APRIL.



THE Weather is commonly unsettled in this Month, the Nights frequently frosty, and blighting Winds from the East are yet to be expected. The new Moon of this Month, which the *French* call the *Ruddy Moon*, is for the most part attended with destructive and violent Winds,

Winds, which endanger the tender Sprouts of Plants and young knit Fruit; therefore Gardeners ought to be careful how they yet expose any *House Greens* or *Exotics* to the open Air, or depend too much upon the fair Promise of a warm Day or two.

If the Weather be dry and windy, stake up all new planted Trees, if that Work was neglected in the preceding Month; and water them well once in ten Days; and fence your spired Seedling *Onions* from the Winds, for they are easily broken.

In dry Weather and light Earth set *Kidney Beans*, about three Inches apart in Lines, each Line two Foot distant from the other, for nearer than that they would not thrive. Now also set *Ronceval Pease* at the like Distance, and plant *Beans* to succeed other Crops; also where *Beans* have been set too thick, cut down every other Row within three Inches of the Root, and they will produce a good Crop in *Autumn*.

Now is the best Time in the whole Year to plant Cuttings or Slips of *Rosemary* and *Lavender*, especially after Rain; and, if omitted in the last Month, we may yet plant Slips of *Thyme*, *Sage*, &c.

Sow *Spinach* for the last time in some moist Place, not too much exposed to the Sun, for else it would soon run to Seed.

It is now our Gardens begin to be over-run with *Snails* and *Slugs*, to the great Destruction of our young knit Wall-Fruit and the Greens of the *Kitchen-Garden*. Many Ways have been prescrib'd to remedy this Evil, as to lay Tobacco-Dust, Soot, Saw-Dust, or Barley-Chaff round about the Stems of Plants, which indeed will keep them off for a little Time, but the first Rain that falls gives them full Liberty to pass over these Fortifications; neither are we more successful in putting Tar upon the Stems of Trees, for a few warm Days dries it up: But the most ingenious Contrivance to keep off these destructive Vermin that I have ever met with, I learnt from a curious Gentleman of *Hartfordshire*, which is so cheap and easy, and so much to the Purpose, that I believe few Lovers of Gardens will be without it.

He directs to wrap about the Stem of a Tree, two or three Rounds of Line or Rope made of *Horse-Hair*, such as are commonly used to hang Cloth upon; these are so full of Stubs and straggling Points of the Hair, that neither a Snail or Slug can pass over them without wounding themselves to Death; so that the Head of the Tree, if it be a Standard or Dwarf, can receive no Harm from them, if we secure the Bottom of the Stems; but to secure a Wall-Tree we must yet use a little more Caution; for besides preventing their Passage up the Stem of the Tree, we must fasten one of these Ropes close to the Wall, so as to enclose all the Branches of the Tree, and allow Space enough to nail up the Summer-Shoots within the Compass of the Hair-Line, as in Figure first, where we may find that the Line is so disposed that as the Tree increases in Bigness, and spreads more and more upon the Wall, the same Rope may be altered so as to serve for several Years.

In *Espaliers* of Fruit-Trees it is only necessary to wrap these Hair-Lines about the Stems of Trees near the Roots, and about the Bottom of every Stake, which Work should be done in the Winter, when the Snails are laid up in their close Quarters.

To preserve *Collyflower Plants*, or other tender Herbs, which are liable to be destroyed by *Slugs* or *Snails*, the Hair-Lines may be fastned about the Edges of the Beds they are planted in. It is to be remark'd, that these Lines are best for this Use when the Hair they are made of is very short, for then they will be full of Points, and compleatly arm'd against any Attempts of these murdering Vermin.

Sow *Cabbage-Lettuce* to succeed those sown in the former Month.

The Ground is now in good Order to receive the Seeds of *Thyme*, and such-like Aromatick Herbs; and this Work should not be delay'd longer than the last Week in this Month. *Note*, All small Seeds must be sown shallow in the Earth, and the larger kinds deeper in Proportion; and again, as the Ground is more light and

and sandy, every sort must be sown deeper than in heavy Soils.

Sow *Purslane* upon the natural Ground, and towards the latter End sow likewise some Seeds of the *Nasturtium Indicum*, if the Hot-beds are not already provided with young Plants. Sow small *Sallads* in open Borders, as *Cresses*, *Spinach*, *Mustard*, *Turneps*, or *Rape* and *Radish*.

We may continue to make Plantations of *Strawberries* till the Middle of the Month, placing the Plants about eight or ten Inches apart.

If the Weather be moist, it is not yet too late to make Layers of *Jessamine*, *Honeysuckle*, *Roses*, and such like Shrubs.

Sow *Sellery* upon the natural Ground, or upon some decay'd Hot-bed, to succeed that sown in *March*.

Sow now *Spanish Chardones* in the natural Ground for a second Crop, making Holes for the Seeds about five or six Foot Distance; put four or five Seeds in each Hole, and when they are come up, leave growing only one strong Plant in a Hole for blanching.

Towards the End hough *Carrots*, *Parsnips*, and *Onions*, leaving the two first about five or six Inches distant from one another, and the latter about three or four.

Make *Ridges* for *Cucumbers* and *Melons* for a full Crop, and prune off the superfluous Branches from the *Melon Plants* upon the forward Ridge: But do this carefully, without lifting up the Runners from the Ground; for the least Disturbance of that kind is apt to bruise the tender Branches, which often ends in the Loss of the whole Plant.

Near the Beginning set up the Poles in the *Hop-Garden*, placing three or four in each Hole, as the Strength of the Plants require. At the same time lead the Wyes, or Runners of the *Hop-Vines* to the Poles, and, if need require, tie them up with Bass. 'Tis now all Weeds should be destroy'd before they run to Seed, to prevent an endless Trouble which they would create, if their Seeds were once suffered to shed.

If we have given timely Assistance with Artificial Heats to those *Vines* planted against the forward Frames,

we may now expect their Fruit to set ; and it is then a proper time to pinch off the Buds of the bearing Branches two or three Buds above the Fruit ; for we must consider those Plants which are forward by Artifice, do not depend upon the same Seasons as those do which are under the common Law of Nature.

Water well your *Strawberries* while they are in Blossom, two or three times a Week, if the Weather be dry ; this must be done in the Morning.

Products of the Month of April.

FOR boiled *Sallads* we have young *Carrots* sown in the foregoing *Autumn*, as also *Winter Spinach* : We have yet some *Sprouts* from the old Stems of *Cabbages* and *Coleworts* ; or young *Cabbage-Plants*, or *Raddish-Tops*, in this Scarcity of Boiling-Greens are used by many, and are not to be despised : But, what is preferable to all, there is *Asparagus* now in great Plenty upon the natural Beds, making its first Appearance in the Gardens near *London* about the third or fourth of this Month, and in those Parts of *Devonshire* lying near the Sea, above a Fortnight sooner ; which I mention here, that we may the better judge how much a Degree Difference South or North between one Place and another, will forward or keep back the Growth of a Plant. We have now some *Sprouts* of *Collyflowers*, which begin to run to Seed, as they often will do if the Winter has been mild ; they eat very well.

Young *Raddishes* are now very plentiful, and some of the *Dutch Brown Lettuce*, which has stood the Winter, will cabbage towards the End.

The small Herbs for *Sallads* upon the natural Ground, are, *Cresses*, *Raddish*, *Turnep*, *Spinach*, and *Mustard* ; and the other Herbs proper to mix with them, are *Burnet*, *Tarragon*, and young *Onions*. Upon the Hot-beds we have now also some young *Purflane*.

About the End, the *Kidney Beans*, which were sown the middle of *February* upon a Hot-bed, will be fit to gather.

We have Plenty of *Gucumbers* upon the Hot-beds made for that Purpose about the Beginning of *February*,

and *Mushrooms* upon the Beds made about the same time.

We have now *Scallions* and *Leeks*, and sweet Herbs growing of all sorts, except that which is called the *Summer Sweet-Marjoram*.

Ripe *Cherries* and large green *Apricots* are now in Plenty at Mr. *Millet's* aforelaid, and ripe *Strawberries* upon those Plants which have been assisted with a Hot-bed.

Works to be done in the Kitchen-Garden in MAY.



ALTHO' in this Month the Season is so far advanced as to bring many Plants to their highest Perfection, and Nature seems to be drest in her Wedding Garment, the Garden is yet subject to many Hazards from frosty Nights and cold Blasts, which oftentimes happen in the first fifteen Days. It is not many Years since a great Snow fell in the first Week of this Month; and though Snows are uncommon at this Season, yet the Showers which frequently fall towards the Beginning, are often mixed with Hail, which I account the most pernicious Offspring of the Weather, with respect to Vegetables, as their Leaves and young Fruit are then tender, and very subject to bruise by every little Accident of that kind. It has been a Rule among the Gardeners, about the middle of this Month to expose or bring abroad their Exotick Plants, and such tender Shrubs as the Uncertainty of the Weather in the preceding Months confined within Doors; and I have observ'd, we seldom have any Weather so unfavourable to Plants after the fifteenth as to do them any Prejudice.

If ill Weather or other Accidents has prevented a Gardener from performing what I have recommended for the Works of the last Month, let him delay them no longer than the first Week in this; for now the Season is so far advanced, that a Day lost is equal to a Week in *January*, *February* or *March*.

Now

Now look to your *Melon* Ridges, as well those made in *February*, as those which were planted in the last Month, weeding them, and carefully pruning off the Water Branches, which are known by their Flatness and extraordinary Breadth; it is also adviseable to pinch off the Tops of such Runners as have Fruit upon them, leaving three or four Joints always beyond the Fruit, and particularly taking Care that every Fruit be sufficiently sheltered with Leaves, for to expose them to the Sun while they are small, spoils their Growth. *N. B.* A *Melon* is about forty Days between the time of its setting and ripening; and as I prescribe that Fruit to be shaded by the Leaves during the time of its Growth, so when that is perfected we cannot expose it too much to the Sun for ripening, if we would have it well tasted.

If the Season be dry, rather float the Alleys between the *Melon* Ridges, than pour Water upon the Plants or near the Stems; for the Use of Watering is to feed the extream Fibres of the Roots, which are the only Parts of a Plant by which it receives its Nourishment, and these Fibres in *Melon* and *Cucumber* Plants always run as far as the Branches: The Inconveniencies which attend the wetting the Leaves or Stems of these Plants, are either, that they rot or mould by the Wet lying along upon them, or-else they are scalded if the Sun shines hot.

The Water for this Use should be as simple as possible, for all Waters prepared with hot Dungs breed Insects among the Plants, which often destroy them. Pond-Water, which lies exposed to the Sun, I take to be the best, and even that ought to be given but in small Quantities to a *Melon*, for much Wet spoils its Flavour, but *Cucumbers* are great Lovers of it.

The Beginning of this Month sow *Cucumbers* in the natural Ground, about twelve Seeds in each Hole, for fear of Disappointments, but leave only four or five when they are come up. Let the Earth be fresh and well work'd with a Spade, rather light than otherwise, for in stiff Soil the Fruit is apt to suffer by Worms. This sowing will afford us Plenty of Fruit in *July*, as well for Pickling as to eat with Sallads, a Plantation of this

this Kind producing near twice as much Fruit as one of the same Quantity of Ground forc'd with Dungs.

Sow some of the *Dutch brown Lettuce* to be planted out the next Month for Cabbaging. We may also re-plant *Imperial* and *Silesia Lettuce*, if we have any large enough for that Purpose. If any of the *Imperial Lettuces* are Cabbaged, cut the Tops of them cross-wise, that the Flower-Stems may have Liberty to shoot in order for Seeding. Sow yet some *Raddishes*.

Transplant *Colly-flower* Plants, and make your first Drills for *Sellery*, if your Plants are large enough.

Sow *Ronceval Pease*, and towards the End earth up and stake those which are sown in the former Month.

We may now sow some *Endive* very thin, to be blanched without transplanting.

Sow *Purslane* upon the natural Ground, and *Cabbages*.

Gather carefully the Nests of *Caterpillers*, and other Insects, which annoy your Trees, and prune off all crumpl'd Leaves and Twigs, for they harbour the worst of Vermin, although they are scarce visible, without the Help of Microscopes: This Work is the more necessary, because every Insect increases Yearly about 400, and some of them many more; for Example, those *Caterpillers* which feed upon the *Cabbage*, and change into the common White Butter-flies, breed twice every Year, each of them laying near 400 Eggs at one time; so that from the second Brood of one single *Caterpillar* we may reasonably expect 160000.

Continue to destroy Weeds before they shed their Seeds, and particularly those Kinds which have feather'd Seeds, such as *Dandelion*, which are carry'd by the Winds to every Quarter of the Garden, and are hardly to be rooted out when they once get Possession.

Products of the Kitchen-Garden in May.

THE Kitchen-Garden now affords us many pleasing Varieties both of Fruits and Herbs.

Asparagus is now in great Plenty, and *Colly-flowers* are now in their greatest Perfection. The *Imperial*, *Royal*, *Silesia* and many other Kinds of *Cabbage Lettuces*,

Lettuces, are in their Prime, and very proper *Sallads* for this Season, with Mixtures of young *Burnet*, *Purslane*, the Flowers of the small *Nasturtium*, and *Cucumbers*; for the small Herbs which were the *Sallads* of the last Month, are now to be laid aside, as they are apt to run into Leaf almost as soon as they are above Ground, and are too hot for the Weather.

We have yet some *Kidney-beans* upon the *Hot-beds*. This Month we gather *Pease* and *Beans* from those sown in *October*, and have plenty of *Artichokes*.

We have now green *Gooseberries* for *Tarts*.

The *Carrots* sown upon the *Hot-beds* in *February* are now very good, but those remaining of the Crop sow'd at *Michaelmas* are hard and good for nothing. *Spinach* is yet fit for Use.

Towards the End we have some *Scarlet Strawberries* ripe in the natural Beds, and the common *May Cherry*, with some few of the *May Duke-Cherries* against Walls, and also green *Apricots* for *Tarts*.

This is the most proper Month for distilling of Herbs, which are now in their greatest Perfection.

Works to be done in the Kitchen-Garden in JUNE.

THE Method I have taken in the preceding Sheets, in giving a short Account of the Weather, which may reasonably be expected in every Month, was chiefly designed to stir up the Gardeners to a necessary Care of such of their Plantations as are the most subject to be injured by uncertain Seasons; But as in the foregoing Months it required our greatest Skill and Diligence to guard against Frosts, so now we ought with the greatest Application, to use proper Methods for defending our Plantations from the too violent Scorchings of the Sun, and have a watchful Eye upon such Plants, especially as have been lately transplanted, and refresh them with moderate Waterings about their extream Fibres, for to give them Water too near the Stem does them little good; this Work ought now to be done in the Evenings.

Continue

Continue to mow Grass Walks early in the Morning, and after Rain.

Sow some *Lettuces* for Cabbaging, and replant others which are large enough for that Purpose.

We may yet sow *Raddishes* and some *Endive*.

Continue to destroy Weeds as in the former Months.

It is now a proper time to clip our Edgings of *Box*, &c. especially after Rain; but if the Weather be dry, gather Herbs for drying, to lay up for Winter Use; those are commonly *Sage of Virtue*, *Mint*, *Carduus*, *Sweet Marjoran*, *Thyme*, *Lavender*, *Rosemary*, and the Flowers of *Marygolds*.

About the twentieth transplant Leeks in light rich Ground, about six Inches apart.

Cut no *Asparagus* after the first Week in this Month, for it will impoverish the Roots.

The Season is now very proper for budding or inoculating of *Peaches* and other Stone Fruits.

Sow *Kidney-beans*.

Set some of the *Ronceval Pease* about four or five Inches apart, allowing two Foot Distance between the Lines; these will afford a good Crop in *September*.

Now look to your *Espaliers* of Fruit-Trees, and lay in good Store of Branches, as well to supply Vacancies as for Fruit-bearing.

Products of the Kitchen-Garden in June.

AT the Beginning we have some *Asparagus*, but I cannot advise cutting them after the first Week.

We have great Plenty of *Garden Beans*, *Pease*, and *Kidney-beans*. *Colly-flowers* are now in great Perfection, and some of the *Battersea* and *Dutch Cabbages* will be fit to cut towards the Beginning of the Month. We have also great Plenty of *Artichokes*.

We begin to draw some young *Carrots* and *Onions* that were sown in *February*, and some young *Parsnips*.

Sallads for this Month are composed of *Purslane*, *Burnet*, the Flowers of *Nasturtium Indicum*, and *Cabbage Lettuces* of several Kinds, viz. the *Dutch Brown*, the *Imperial*, *Royal*, *Silesia*, and the *Coss Lettuces*, with some blanch'd *Endive* and *Cucumbers*. The

JULY. *for ordering the Kitchen-Garden.* 21

The Flower-stems of *Burrage* and *Burnet* are now good in Cool Tankards.

The Pot-Herbs in Use the preceding Month are still good.

We have green *Gooseberries* for Tarts 'till about the End of this Month.

The ripe Fruits are *Strawberries*, *Cherries*, of many Kinds, as the *Duke*, *White*, *Black*, and *Red Hearts*, the *Flemish* and *Carnation Cherries*, some *Rasberries*, *Currants*, and *Melons* of the first Ridges. Also we have *Codlins* now fit for Use, and towards the End some *Ju-nitings* and the *Masculine Abricot*, and in the forcing Frames (if we have any) all the forward Kinds of Grapes are ripe.

Works to be done in the Kitchen-Garden in JULY.

WE are now arrived at that happy Season, which affords us almost every Variety the Kitchen-Garden can produce. If the Gardener has been diligent in the preceding Months, he now meets the Reward due to his Skill and Labour. We have little Rain at this time, and the Weather very hot; therefore our greatest Care must be to water carefully all new planted Trees and Herbs, so as to nourish their outward Fibres, as I have before directed. The Hours of general watering in this Month, are from Five in the Morning until Eight; and from Five in the Afternoon 'till Eight or Nine in the Evening; but in particular Places, which have the Benefit of some Wall or Hedge to shade the Sun from them, we may take other times of the Day, observing the Motion of the Sun, that his Beams do not reach them, 'till at least two Hours after watering; for the extream Heat of the Sun at this time of the Year would scald a new watered Plant, if we did not allow a sufficient time for the Moisture to sink into the Ground before the Sun comes upon it.

Trust not too much to the sudden Showers which may now fall, for they are of little help to the Roots of Plants; neither neglect to water those Plants which stand

stand abroad in Pots or Cases, for they have yet less Benefit from the Rains in this Season, than the Plants in the open Ground.

The first Week sow *Kidney-beans*, and some *Pease* to bear in *September* and *October*, where they may have some Shelter from the frosty Nights in those Months. And have an Eye to such Herbs as are now seeding: Water them plentifully, for about this time the Seed-Vessels of many are forming, and a good Watering or two is very helpful to the filling of the Seed.

Delay not to gather such Seeds as are fully grown and coloured in their Husks, pulling up the whole Plants, and setting them upright in a Green-house 'till the Seed-Pods are dry; for were we to wait 'till the Husks open before we gather them, great Part of the Seed would be lost. This Way of gathering Seed is commonly practised; the Moisture in the Plants and a little Sun will perfect the Seeds, and they are subject to no Hazard from Birds or Wet.

The first Week sow *Cucumbers* upon a Bed made with dry Horse-Litter, cover'd with light Earth ten Inches thick; these will begin to blossom in *September*, and must then be cover'd at Night with a common Frame and Glass, to keep them from Frosts and cold Rain. By this Method you may have *Cucumbers* 'till *Christmas*.

Sow *Royal*, *Silesia*, and *Brown Dutch Lettuces* about the middle of the Month, some of which will be cabaged for Winter Use, and may then be planted close together, where they may be shelter'd with Glasses, and have the Benefit of the Sun; but we must note, that they should be secured before any Frost can pinch 'em, or they will rot.

The second Week in this Month sow *Carrots*, *Turneps*, and *Onions* to stand the Winter.

Earth up *Sellery* in Drills, and plant out a new Parcel to succeed the former.

Plant out *Colly-flowers* to blossom in *September*.

Plant *Cabbages* and *Savoys* for Autumn and Winter Use.

Guard

JULY.

for ordering the Kitchen-Garden.

23

Guard against Wasps and other Insects, which now devour your Fruit, by placing Phials of Honey and Ale near your Fruit-Trees. This Way you may soon catch a large Quantity of them. Once every Week renew the Bottles, and above all take care to bruise the Insects you take out of them, for tho' they are seemingly dead, I have known a warm Day or two bring them to themselves; therefore take Care how you throw them heedlessly away.

There is no Time more proper to war against Ants, and other such destructive Vermin than this Month; they are now all abroad, and may be taken. [See Mr. Laurence's Invention for destroying of Ants and Earth Worms in his *Fruit-Garden Kalendar*, p. 39.]

Be careful to pick off all crumpled Leaves, wherever you see them, and the very Twigs themselves if they are curl'd, for they are the Beds of destructive Creatures.

I the more particularly recommend the Destruction of these devouring Vermin, because of their wonderful Increase, especially the smaller kinds of them, such as infect the *Collyflower*, whose Eggs are five hundred times less than the least visible Grain of Sand, and many thousands of them in Number lay'd (as I believe) from one single Insect; so that from a second Generation of them they are so numerous, that if every Egg which one might find upon a blighted *Collyflower*, was a Globe of an Inch Diameter, they would fill more Space than the whole Terrestrial Globe. The wonderful Smallness of the Eggs of those Creatures, I confess, may seem very strange to those who are unacquainted with the Use of Microscopes; but this is no more curious than what the late famous Dr. Hook has taught us in his Works, where he mentions the Seeds of Moss, which were so small, that ninety thousand of them being laid together in a strait Line, did not exceed the Length of a Barley-Corn, and that 1,382,400,000 of them would weigh only a Grain. But see more of these minute Beings in Mr. Hook's *Micrographia*, Mr. Lewenhoek's Works in the *Philosophical Transactions*, Mr. Balle's Letter concerning

cerning Plagues, following my Chapter of Blights, in my *New Improvements*, Part III.

Hough and Weed as in the former Month.

About the 20th sow some *Collyflowers* to stand the Winter; for the right Season for this Work is chiefly to be regarded, if we propose to have good Flowers early in the Spring; for sowing them only a few Days sooner or later, makes them either run before their Time, or come much later and weaker than they ought to do. If the Winter be mild, and the Plants are set close together, many will run up to Seed; and if sharp Frosts and a rough Season begins in *November*, some of this Sowing (with the usual Helps) will make good forward Plants: However, since the Price of a little Seed can be no great Matter to a curious Man, I advise to sow again the first Week in the next Month, as I shall more particularly direct; so that from these two Seminars it will be morally impossible to miss of a Crop to our Mind; for if the first run, they will not be quite unfit for Use, and those sown in *August* will then certainly produce good Flowers in the Spring.

We sow *Chervile* for Winter.

We take up this Month *Shallots*, *Garlick*, and gather *Rocambole* when the Stalk turns yellow.

When the Stalks of *Onions* change their Colour, pull them up in dry Weather, and expose them to the Sun till they are well dry'd, to lay up for the Winter; but take care the Rain does not come at them after they are out of the Ground.

Transplant *Endive* for blanching against Winter.

Chardones should now be tied up with Hay or Straw-Bands for blanching.

Make a Bed for *Mushrooms*, and be sure to cover it very thin with Earth, hardly two Inches thick, for on that depends your Success.

Weed your young Nurseries of *Forest-Trees*.

Products

W

Kidney
We

bundan
be eate

All t
the Ga

down
are in

Salla
tuce, I

bers, F
blanch

We
We

Gooseb
and N

The
Pears.

wards
July C

Th

Works



so out
We

and af
be pro

Products of the Kitchen Garden in July.

WE have *Ronceval Pease*, *Garden Beans*, and *Kidney Beans*; and some commend the *Wing'd Pease* to be gathered very young, and dress'd as *Kidney Beans*.

We have *Collyflowers*, *Cabbages* and *Artichokes*, in Abundance, and some of the small *Artichoke-Suckers*, to be eaten raw or fried.

All sorts of Herbs for the Kitchen are very good, if the Gardener has minded from time to time to cut them down for shooting afresh: Aromatick Herbs especially are in their greatest Perfection.

Sallads for this Month are composed of *Cabbage-Lettuce*, *Purslane*, *Tarragon*, *Burnet*, young *Onions*, *Cucumbers*, *Flowers of the Nasturtium Indicum*, and some *Endive* blanched.

We have young *Carrots*, *Turneps*, and *Beets*.

We have great Plenty of *Musk-Melons*, *Currants*, *Gooseberries*, *Rasberries*, *Cherries*, *Plums*, *Abricots*, *Peaches*, and *Nectarines*.

The *Juniting* and *Codling* are now good, and some *Pears*. We yet have some *Wood-Strawberries*; and towards the End our first *Figs* are ripe, and some of the *July Grapes*.

This is the best Month for Pickling *Cucumbers*.

Works to be done in the Kitchen-Garden in AUGUST.

THE first Part of this Month the Weather is commonly hot and dry, so that Watering is still necessary; but about the latter End we are not without Danger of frosty Nights, and I have observed that then also our first Rains begin.

We may water in the Evenings 'till the fifteenth; and after that, if there is Occasion, the Morning is to be preferr'd for that Work, for fear of Frost.

The first Week sow a second Crop of *Collyflowers* to stand the Winter, lest the first should run to Seed, which they will be apt to do if we have an open Season 'till *Christmas*, or the Ground be light and lie in a Bottom; especially near the Sea: 'Tis good to provide against such Accidents.

Sow *Radishes*, *Cabbages*, *Coleworts*, and *Onions* to stand the Winter.

Sow *Lettuce*, *Chervil*, *Cornfallet*, and *Spinach* for Winter Use.

Now break off the Stems of such *Artichokes* as have done blowing.

Sow *Cresses* to stand the Winter; they will heighten the Taste of those *Sallads* which are gathered upon the Hot-beds in *December*, *January*, &c.

Transplant *Cabbage-Lettuces* to stand the Winter, especially of the *Dutch Brown* sort.

Tie up *Endive* for Blanching.

Give more Earth to your Blanching *Sellery*, and continue to raise the Earth about it every Fortnight, 'till it is fit for Use.

Gather Seeds as directed in the former Month.

Yet continue to destroy Weeds, and such Vermin as annoy your Trees.

Towards the End slip and set Aromatick Herbs, as *Savory*, *Thyme*, *Hyssop*, &c. and cut down those which are run to Seed within three or four Inches of the Ground.

'Till the tenth of this Month we may sow *Turneps* in the open Field, especially about *London*, for these Roots not only yield a profitable Crop, but very much enrich all light Soils. In those Parts near the Sea in *Devonshire*, the twentieth of this Month will not be too late to sow them, for that Country is so fortunately situated, that it will perfect a Plant above fifteen Days sooner than any Part about *London*; and from the best Observations I can make, I find that about *Northampton* all Plants come near a Fortnight later than in our *London* Gardens; so that *Turneps* should be sown in those Parts very early in *August*, or rather the End of *July*.

Products



are f
for
great
of re
dang

Products of the Kitchen-Garden in August.

FOR boyling we have *Cabbages* and the *Sprouts* of the first *Cabbages*, *Collyflowers*, *Artichokes*, *Cabbage-Lettuce*, *Beets*, *Carrots*, and *Turneps*, but other boiling *Roots* should not yet be touch'd.

We have yet some *Beans*, *Pease*, and *Kidney-Beans*. All sorts of *Kitchen-Herbs* are now as in the last Month.

We have *Raddishes* and *Horse-Raddish*.

The *Sallads* are *Cabbage-Lettuce*, *Cucumbers*, with a Mixture of young *Cresses*, *Mustard*, *Raddish*, and a little *Tarragon*.

Roots now dry in the House, are *Onions*, *Garlick*, *Shallots*, *Rocambole*.

We have Plenty of *Cucumbers* for Pickling, and this Work should not be now any longer delayed, for the first Frost or great Rains spoil them.

We have *Musk Melons* in abundance.

Towards the End we begin to cut some *Sellery*.

We have still some *Gooseberries*, *Rasberries*, and *Currants*, with some of the *Carnation* and *Morella Cherries*, *Abricots*, *Plums* of various Kinds, several sorts of *Peaches* and *Nectarines*, *Pears* and *Apples*, several Kinds of *Grapes*, *Figs* in abundance, *Mulberries*, and some *Filberts*.

Works to be done in the Kitchen-Garden in SEPTEMBER.

IN this Month the Gardener has great Variety of Business, and must employ his Head as well as his Hands towards furnishing his Kitchen-Garden with every thing necessary for Winter Use. The Showers, which are seldom wanting at this Season, prepares the Ground for the Reception of many Plants and Seeds; and the great Heats also declining, gives us now Opportunity of replanting many things which would have been endanger'd by removing in the preceding Months.

At the Beginning hough *Turneps* the first Time.

If the Weather be dry, gather such Fruits as are now ripe upon the Trees, and such others as are full grown, and in good Condition to be laid up in the House for the use of the two following Months.

Note, Such *Pears* or *Apples* as are fit to gather will easily leave the Tree, therefore use no Violence to pull them off, for such as do not willingly part from the Tree, will shrivel and have an insipid Taste.

Gather such small Seeds as are now ripe, according to the former Directions.

Gather your *Leek* Seed, if the Seeds are black, cutting the Heads from the Stems, and spread them upon a Sheet every Day in the Sun, till they be fit to be thrash'd out.

Gather the Pods of *Garden* and *Kidney-Beans*, and expose them to the Sun for drying, to be laid up till Spring, or the time you would use them, and let them not be taken out of the Seed-Pods till your Ground is ready for them, for the Pods preserve the Seeds. In like manner save your choice sorts of *Pease*.

The *Cucumbers* which are now full ripe must be cut open, and the Seeds and Pulp taken out of them, to remain together two or three Days before they are wash'd clean: the Seed may then be kept in Water about twenty four Hours, and lay'd to dry in the Sun for ten Days. Be sure all Seeds are thoroughly dry before they are laid up, or they will rot.

Cover now every Night your *Cucumbers* sown in *July*.

Sow some of the *Spanish Radish* for the Winter.

Make Beds for *Mushrooms* as before directed.

We may yet replant *Endive*, and all sorts of Fiberous-rooted Herbs.

Continue to earth up *Sellery*, and now raise Banks of Earth about your *Chardones* for blanching.

Sow *Spinach* to be cut in *February*.

Yet sow *Sorrel* and *Chervil*.

Make Plantations of *Cabbage* and *Coleworts*.

'Tis now a good Season to transplant *Strawberries*.

Now make Plantations of the *Dutch Brown Lettuce* to stand the Winter. Transplant

Transplant young *Collyflower* Plants in Places where they are to Flower, and in Nurseries under some warm Wall, or Place of Shelter. *Note*, Those which are now planted out for Good, will blossom above fifteen Days sooner than those which are planted in the Spring, and will produce much larger Flowers, if they are well defended from Frosts with Glas Bells.

If the Season be dry, water in the Mornings.

The last week, if Showers fall, is a very safe time to plant Fruit-Trees, altho' their Leaves are not fallen; such as *Peaches*, *Nectarines*, *Cherries*, and other *Stone-Fruit*; but *Apples*, *Pears*, &c. may be delayed till the middle of the next Month.

We may now transplant *Asparagus Roots*.

Sow small Herbs for Sallads in some well-exposed Place, observing to provide such Mixtures for this Season, as are hotter to the Taste than what are raised in the former Months, for the Evenings (the best Time to eat Sallads) are now cold.

Sow some Seeds of the *Nasturtium Indicum* in Pots to stand the Winter, which they will do very well, if they are shelter'd in a common Greenhouse.

Products of the Kitchen Garden in September.

WE have now several kinds of *Peaches*, *Grapes*, *Figs*, *Pears* and *Apples*, with some of the late Kinds of *Plums*.

We have yet *Melons* and *Cucumbers*.

Walnuts are now good, and *Filberts* full ripe.

This Month affords us some young *Garden Beans* and *Ronceval Pease*, and we have yet some *Kidney-Beans*.

Upon the *Artichokes* which were planted at Spring, we have now very good Flowers and Suckers, and we have still Plenty of *Collyflowers*.

We have *Cabbage-Lettuces* of several sorts in great Perfection, and *Radishes*.

Sallads for this Month are composed of *Cresses*, *Radish*, *Chervil*, young *Onions*, *Tarragon*, *Burnet*, and *Lettuce*, with some blanch'd *Sellery* and *Endive*.

We have Plenty of *Mushrooms* upon Beds and in Pasture-Grounds.

We have *Carrots*, some *Turneps*, *Skirrets*, *Scorzoneræ*, and *Beets*, both the *Red* and the *White*.

Roots for the Kitchen use are *Horse-Raddish*, *Onions*, *Garlick*, *Shalots*, and *Rocambole*.

We have abundance of *Cabbages* and *Sprouts of Cabbages*, with some *Savoys*; but the last eat much better when the Frost has pinch'd 'em.

Works to be done in the Kitchen-Garden in OCTOBER.



WE ought now to make Use of every Opportunity to compleat our Plantations of Herbs for Winter Use. The greatest Part of this Month we may expect tolerable Weather, but after that our chief Business will be, to secure from the Severities of the Season all Plants which are in Danger of being injured by the Frosts and high Winds.

'Tis the first Week in this Month that I advise the sowing of *Cucumbers* on the natural Ground, to be afterwards transplanted into Pots, where they may be shelter'd from the Cold of the Nights, 'till a gentle Hot-bed is necessary for them. This Way of raising *Cucumbers* to have them come forward, is certainly much better than to begin, after the usual Method, in *December* or *January*; for these Plants will better endure the cold Air, than those which are raised when the Ground is cover'd with Snow.

Now set some *Kidney-Beans* in Baskets under some warm Wall, to be afterwards assisted by moderate Hot-beds as the Season becomes violent. With good Management these will fruit very early.

Take up those *Colly-flower Plants* which begin to flower, tie their Leaves together, and bury their Roots and Stalks in Sand in a Celler, or some cool Place, the Flowers will increase in Bigness, and remain good two or three Months.

Also

Also cut *Artichokes* with long Stalks, and preserve them in the House, setting their Stalks in Sand.

'Tis now the Season to lay up Roots for Winter Store, such as *Carrots* and *Parsnips*; and some Gardeners also think it best to take the Roots of *Turneps* out of the Ground, and lay them in Sand: But I rather chuse to leave the *Turneps* in the Ground 'till we are ready to use them; and for the other two kinds I prescribe the following Method: Make choice of a dry Part in your Garden, and there dig a Trench about six or eight Inches deep, into which (without Mixture of Earth or Sand) lay your Roots close together, first cutting off their green Tops and growing Buds, and then cover them about six Inches thick with Wheat-Straw ridge-wise. We may this way preserve them fit for Use till the following June.

'Tis now the best time of the Year for transplanting of Fruit-Trees, altho' their Leaves are upon them.

Transplant *Forest-Trees* of all sorts from the Beginning to the End of the Month; the *Elm* especially about the first Week, altho' its Leaves are then very green. I have seen the Experience of this at *Mambhead* in *Devonshire*, the Seat of *Thomas Balle, Esq.* a very curious and learned Gentleman.

About the middle of the Month sow the *Cyder-Pressings* in Beds of fresh Earth, to raise Stocks for Graffing, or even making of *Orchards* without Graffing. From a Nursery of this Kind we raise as many different sorts of *Apples* as we raise Plants, altho' the Seeds came all from the same Tree; so much is Nature pleas'd with Variety: And it may be, was the Earth more constant and uniform in its Productions, its Vegetative Power would be too soon exhausted; for I conceive, were all *Apples* exactly the same, they would all draw the very same Nourishment from the Earth; and the like with every other Tribe of Vegetables. But this Variety seems to determine what I have often thought of, that there are as many distinct Qualities in the Earth, as there are different kinds of Plants growing upon it, and that each Plant can only take out of the Earth that

Spirit which its Parts are naturally prepared to receive, and leave the others undisturbed. If the Generation of Plants is allowed, as I have endeavoured to explain it in the first Part of my *New Improvements*, the vast Varieties in Plants seem to proceed from the Coupling of one Plant with another; that is, the *Farina Fœcundans* of one sort being convey'd by the Air, and lodg'd upon the Female Parts in the Blossoms of another Tree, changes the Properties in the Seed, which it impregnates so as to make it produce a Tree differing in some respects from the Mother Plant.

Now lay up some *Acorns* and the *Mast* of other Timber-Trees in dry Sand.

We may yet transplant *Cabbage* and *Collyflower Plants*, and now make your last Plantation of *Lettuces* to stand the Winter.

The *Cucumbers* which I directed to be sown in July must now be carefully covered up every Night, and the Glasses be kept over them in wet or windy Weather, but give them as much Air as is possible in the Day-time, if the Season will permit.

Continue to Earth up *Sellery* for Blanching.

Towards the End, Earth up and dress such *Artichokes* as have done blowing.

Sow *Cresses*, *Lettuce*, *Mustard*, *Raddish*, *Turnep*, and *Spinach* upon a decay'd Hot-bed, to be cut for Sallads.

If you have not yet made a Plantation of *Lettuces* (already Cabbaged) for Winter Use, delay no longer to do it in some well-exposed Place, where they may be defended from the Frost.

Now gather such *Pears* and *Apples* as are full ripe, in a dry Day, without bruising them, and lay them in the Fruiterie upon dry *Moss*.

Sow *Raddishes* in some warm Place to draw early in Spring.

Sow some of the *Hotspur-Pease* and *Spanish Beans* in some well-exposed Border, rather under a thick Hedge, than under a Wall.

Make Plantations of *Gooseberries*, *Currants*, *Rasberries* from the Suckers or Cuttings,

Now

Now make Plantations of *Apples* (grafted upon *Paradise Stocks*) in Pots; they will bear when the Trees are very small, and are very Ornamental at an Entertainment to be set growing upon a Table.

Now put some Roots of *Mint* upon a gentle Hot-bed.

Products of the Kitchen-Garden in October.

IN this Month we have yet remaining some *Collyflowers*, *Artichokes*, *Pease* and *Beans*.

The *Kidney-Beans* sown in *July* will now produce good Fruit, if we defend them from the cold Nights.

We have yet *Cucumbers* and some *Melons*.

Roots for boyling are *Turneps*, *Carrots*, *Parsnips*, *Potatoes*, *Skirrets*, *Scorzonera*, and *Beets*.

Roots to use raw in the Kitchen are *Onions*, *Garlick*, *Shalots*, *Rocambole*.

Sallad Herbs are *Cresses*, *Chervil*, *Mustard*, *Raddish*, *Turneps*, or *Rape*, *Spinach*, *Lettuce* both small, and several sorts of *Cabbage-Lettuce*, *Burnet*, *Taragon* and young *Onions*, with blanch'd *Sellery* and *Endive*.

We have *Chardones*.

Herbs for Soup and other Kitchen-Uses are *Parsly*, *Beets*, and all the Aromatick Herbs.

Ripe Fruits in this Month are some of the late *Peaches* and *Plums*, *Grapes*, *Figs*, and *Mulberries*, with some *Filberts* and *Walnuts*, and great Variety of *Pears* and *Apples*.

We have Plenty of *Mushrooms*.

Works to be done in the Kitchen Garden in NOVEMBER.



THIS Month is subject to violent Winds, frosty Nights and great Rains, taking their Course by turns to the great Hurt of our Gardens and Plantations. It is not enough to guard against the pinching Frosts, or shelter many tender Plants from the cold Rains which fall

fall at this Season, but we must also be diligent to secure our Fruit-Trees and such Forest-Trees as have been lately planted, with strong Stakes, lest they are blown down or shaken by the boisterous Winds now coming from the West; for nothing in my Opinion contributes to destroy the Welfare of a young Tree more, than to leave it unguarded and exposed to the Mercy of the Winds; the young Fibres lately formed are broken, and every Part thro' which the Sap should have its Passage to the Head, is bruised and wounded; so that for want of a natural free Course for the Sap, the top is not half supply'd, and the whole languishes.

Now trench Ground, and lay it up in Ridges to mellow.

Set *Beans* of the *Spanish* Kind, and some of the *Hotspur-Pease* in some well-exposed Place.

Prepare now a gentle Hot-bed for the *Cucumbers* sown in *October*, and for the *Kidney Beans* sown at the same time; but plant them not together, for the Warmth which is necessary to keep a *Cucumber* would destroy the *Beans*.

Now make Hot-beds for *Asparagus* to have some in *December*; and if we are not provided with Roots in our own Nursery, we may take them from some old Plantation which is worn out. Set the Roots close together without trimming, taking Care that they do not come within two Inches of the Dung, and that their Buds are covered at least four Inches thick with Earth. (See further Directions in my *New Improvements*, Part III. p. 90.)

'Tis now a very good time to lay down Branches of the Vine, especially such as we would have Fruit upon the following Year, to be set growing in Pots upon a Table at great Entertainments. The Branches for this Purpose must be Shoots of the same Year, and so drawn through the Hole at the Bottom of a Garden-Pot, that when it is filled with Earth there may be a reasonable Number of Eyes or Buds above Ground: A strong Branch perhaps may bear eight or nine, and, as the Branch is smaller in Proportion, four or five.

Now

Now prune your *Vines* growing in the open Borders and Vineyard, and plant new ones where there is occasion. They will bear plentifully, and their Fruit will ripen very well without the Help of a Wall, if we make choice of the *Black Currant Grape* (the best for that Use,) the *White Muscadine*, and the *Black Fronteniac*, especially when they are rightly managed, as in the Garden of Mr. Rigaud near Swallow-Street, who never fails of a good Crop of Fruit from these sorts planted in open Borders.

Continue still to plant Trees, if the Weather be open, and plant Suckers and Cuttings of *Gooseberries*, *Currants* and *Vines*.

Plant *Mint* upon moderate Hot-beds.

Sow *Lettuce*, *Cresses*, *Mustard*, *Raddish*, *Turnep* and *Spinach* upon Hot-beds for young Sallads.

Earth up *Sellery*, and tie up *Endive* Plants for blanching.

Now is the best time to cut off the *Asparagus* Haulm when it is turn'd yellow, cut it within two or three Inches of the Ground, and fling up some Earth out of the Alleys upon the Beds; or if your *Asparagus* has been worn, give it a Covering of rich Soil.

Continue still to trench Ground, and in frosty Weather wheel on Dung and other Manures upon such Places as want to be enriched, for then the Walks will not be spoiled.

Sow *Pease* and *Beans* of the *Hotspur* and *Spanish* Kinds in open Ground, and if the Weather be fair, Earth up those sown in September.

Products of the Kitchen-Garden in November.

THIS Month we have *Collyflowers* in the Green-House and some *Artichokes*.

Roots to be used this Month are *Carrots*, *Parasnisps*, *Turneps*, *Beets*, *Skirrets*, *Scorzonera*, *Horse-Raddish*, *Potatoes*, *Onions*, *Garlick*, *Shalots*, *Rocambole*.

Pot Herbs are *Sellery*, *Parsly*, *Sorrel*, *Thyme*, *Savory*, *Beet-Leaves* and *Clary* out of the Garden: And of dry'd Herbs

Herbs we have *Mint*, *Sweet Marjoran*, and Flowers of the *Marygold*.

Herbs for boiled Sallads are *Cabbages* and the *Sprouts* of *Cabbages*, some few *Savoy Cabbages*, and *Spinach*.

We have *Cucumbers* upon those Plants sown in *July*, if we have kept them well guarded from *Rain* and *Frost*.

Sallads for this Month are the small Herbs on the *Hot-bed*, with *Burnet*, *Cabbage-Lettuce*, *Sellery* and *Endive* blanch'd, and young *Onions*.

We have some *Grapes*, *Peaches* and *Figs*, with *Apples* and *Pears* of several sorts; some *Bullis*, *Walnuts*, *Hazelnuts*, *Chestnuts*, *Medlars*, and *Services*, with some *Arbutus* or *Tree-Strawberries*.

Work to be done in the Kitchen-Garden in DECEMBER.



THIS Month, commonly called the *Black Month*, is subject to every sort of Weather, which is fatal to Plants of a tender Nature. All Vegetables of our Climate seem now to sleep; the Days are short, and very little Warmth from the Sun makes every curious Lover of Gardens wish for the Spring; tho' indeed 'tis now an ingenious Gardener will shew his Skill, in helping Nature by Artifice to produce such Fruits and Herbs as she is not capable of bringing forth, without very extraordinary Assistance.

Guard against the Violence of Frosts, which commonly begin with great Severity to reign in this Month.

In bad Weather, chiefly in the long Evenings, a Gardener ought to employ himself in his Study, in preparing and fitting up his Garden-Tools, and making such Shelters for tender Plants as will now be required. He ought to provide his Shreds for Nailing, and look over his Fruiterie, removing all such Fruits as are any ways damaged, for they spoil the rest.

Examine

Examine Orchard Fruit-Trees, and take away such Branches as make Confusion, covering every considerable Wound with some of the following Mixture.

Take of *Bees-Wax*, *Rosin* and *Tar* equal Quantities, to which add of *Tallow* about half the Quantity of any one of the former; melt and mix them together in an Earthen Vessel well glazed, and immediately after any Amputation, dip a Painting Brush in this Mixture, and cover the Wound with it; this will keep the wet and cold Air from penetrating into the Body of the Plant, and keep it from rotting.

Set Traps for Vermin, they now destroy your Roots and Seeds.

In open Weather we may sow *Pease* and *Beans* of the same Kinds and in the same Manner as directed in the former Month.

We must now look carefully after our Hot-beds, and add to their Heat if they begin to cool, by lining them with hot Dung; but we must always remember the Design of these Beds is rather to defend the Plants in them from Cold, than to make them grow quick. If we were careful to raise Plants of *Cucumbers* and *Kidney-Beans*, as I directed, in *October*, we shall now see them in a hopeful State, and much more capable of resisting the Frosts than those that were sown at the Beginning of this Month, as many Gardeners are used to do.

Towards the middle of the Month make a Hot-bed for *Asparagus*, to be ordered in the same manner of that made in *November*.

Sow upon a Hot-bed *Lettuce*, *Raddish*, *Cresses*, *Mustard*, and other Herbs which are hot, to cut for small Sallads.

In frosty Weather bring into the Garden the necessary Manures for enriching the Ground.

Products of the Kitchen-Garden in December.

WE have now many sorts of *Cabbages* and their Sprouts for boiling, and *Spinach*.

In the Conservatory we have some *Collyflowers*, and *Artichokes* preserved in Sand. The

The Roots for this Month are the same as in the last.

Sallads are the small Herbs upon the Hot-bed, with *Mint*, *Tarragon*, *Burnet*, *Cabbage-Lettuces* preserved under Glasses, with some *Cresses* and *Chervil* upon the natural Ground, which have a high Taste, and help the Sallads of this Season very much; and with these we have *Sellery* and *Endive* blanched.

Herbs for Soups and the Kitchen use are *Sage*, *Thyme*, *Savory*, *Beet-Leaves*, the *Tops* of young *Pease*, *Parsley*, *Sorrel*, *Spinach*, *Chervil*, *Sellery* and *Leeks*, with *Sweet Marjoran* and *Marygold Flowers* dry'd, and also dry'd *Mint*, for the *Green Mint* at this time of the Year is scarce, and not so good for Sauces as for Sallads.

We have *Asparagus* upon Hot-beds, and if we have been diligent, we have yet some *Cucumbers* upon the Plants sown in *July* and *August*.

We have Plenty of *Pears* and *Apples*.



MONTHLY

W



Monthly DIRECTIONS

For Ordering the
Green-House and Flower-Gardens.

JANUARY.



IF the Weather be very severe in this Month, fling some loose Straw over your Beds of *Anemonies* and *Ranunculus*; or if such Beds of Flowers are already covered with Snow, let it remain till it begin to thaw, and then we cannot be too expeditious in removing it, for the Snow-water has a very ill Effect upon Bulbs and Roots of this Kind, if we suffer it to sink into the Ground about them; and besides, if a frosty Night should speedily follow a Thaw, the Wet near the Surface would freeze into a thin Ice, which would cut or wound the Leaves or Stems of these Flowers, and make them decline.

If the Weather is gentle and open, plant *Anemone* and *Ranunculus* Roots in Beds of Earth well wrought with a Spade, and indeed if it was sifted it would be much the better. *Note*, The Earth cannot well be too light for these Flowers, and especially the *Ranunculus*; It should be fresh, and free from any Mixture of Dung, which breeds Vermin, and is ever destructive to Roots of this Kind.

About

About the middle pick off the dead and withered Leaves from your *Auricula's*, and take away as much Earth out of each Pot as possible without disturbing the Roots, to make room for some fresh Earth, prepared with sandy Loam mixed with one third part of rotted Wood.

Note, that in filling up the Pots with this Earth (which must be well sifted) press it gently about the Roots, and raise it quite to the Leaves, but bury none of them, for they will decay.

Note also, All composed Earths should lie at least a Year before they are used.

Guard well against the Mice, for this Month they destroy all bulbous Roots they can come at, particularly the *Crocus*.

In the Green-House pick off all mouldy and wither'd Leaves from the Plants, for whatever they touch they infect. Give no Water to any Plant that will hold up its Head without it; and in severe Weather rather endeavour to keep the Cold out of the House, than make the Plants grow by any forcing Heat, for Shoots made at this time of the Year are sickly, and weaken the Plant. Upon a Thaw make a small Charcoal-Fire or two, in proportion to the Bigness of the House, and let in a little Air at the same time, if the Wind is not too cold: These Fires dry the Damps which rise always after a Thaw, and by destroying those Poisonous Vapours, keep the Plants dry, and free them from the danger of rotting.

Transplant the *Winter Aconite* in Flower, and part its Roots; for when the Leaves of this Plant are decay'd, 'tis very hard to find the Roots.

Flowers now blowing in the Green-House and Flower-Gardens in January.

Several of the *Ficoides* are now in Flower, and *Aloes* of several sorts begin to put forth their Flower-Stems. The *Indian Yellow* and the *White Spanish Jessamines* have yet some Blossoms upon them, and some sickly *Orange-Trees* blossom about this time. The Plant known

known to the Gardeners by the Name of the *Candy-Tuft-Tree*, or *Thlaspi Sempervirens*, is yet in Flower, and some kinds of the *Geranium*, with the *Yellow Indian Jessamine*.

In the Flower-Garden we have in Blossom the *Winter Aconite*, *Single Wall-Flowers*, the *Christmas Flower*, or *Black Hellebore*, and that sort with a green Flower; *Snow-Drops*, the *Brumal Hyacinth*, some *Stock Julyflowers*, where they are all well shelter'd, *Single Anemonies*, the *Gentianella*, the *Winter Cyclamen*, *Primroses*, and some kinds of the *Polyanthos*, the *Laurus Tinus*, *Mezerions White and Red*, and the *Arbutus*, or *Strawberry-Tree*. The *Holly* and *Pyracantha* are now adorned with their beautiful Scarlet Fruit, and the *Amomum Plinii*.

We have now also the *Glastenbury Thorn* putting forth a few faint Flowers, if the Frosts do not hinder; and as this Plant usually begins its blossoming in *December*, it has given room for some superstitious Persons to look upon it as a Miracle, thinking the Flowers appear only upon *Christmas-Day*, as the Story goes of it. *Joseph of Arimathea*, they say, coming into *England*, brought with him a Staff of this Thornwood, and set it upon a *Christmas-Day* in the Ground at *Glastenbury*, where it immediately took Root, budded and blossomed, and so it has continued to do ever since upon that Festival, as the People tell us, in Honour of *St. Joseph* its Master; but the Plant being now pretty well known, and cultivated in several Places, we find it very apt to mistake a Week or two in the time of its Blossoming, according as the Winter has been more mild or severe; sometimes I have seen it in flower at the Beginning of *December*, and at other times it has not budded till the middle of *January*; however, it seldom fails of Flowers about that Season, and has nothing more in it than what we find in all other Plants brought from foreign Parts, which at the time of their natural Spring are ever disposed to blossom, notwithstanding the Opposition of our Seasons; and it is not unreasonable to think this Plant was originally brought from some Country where the Spring is about *December*, such as *Arabia*, the *Holy Land*, and many other

Places about the same Latitude: And if it was true that the first Plant of it at *Glastenbury* grew from a plain Staff or Twig without Root or Branch, it is no wonder, although it had been taken from the Tree six Months before; for I have frequently cultivated Plants in as bad a Condition, which have been longer than six Months without Earth, and they have grown very well; some Stakes of the *Willow*, for Example, will do the same. This Plant may be encreased by grafting it upon the *White-Thorn* in *March*.

Such as are minded to make Gardens of Flowers for the several Months in the Year may compose them from these Catalogues of Flowers blowing in the several Seasons, only observing that such as are to be in their Perfection in the Winter, should have as much of the Sun's Benefit as possible.

Works to be done in the Green-House and Flower-Garden in
FEBRUARY.



CONTINUE the Works of the former Month, if the Season has not then been favourable enough to finish what was directed to be done.

The first Week sow *Auricula* Seeds in Cases filled with light Earth, such as rotted Wood or Leaves, but chiefly (if we can get it) the Earth taken out of the hollow Places in *Willow Trees*. When the Earth is raked level, sow the Seeds upon it, and then press all down with a piece of smooth Board; cover these Boxes with Nets, and let them stand in some shady Place, giving them frequent Waterings till they come up. [See *New Improvemens*, Part II. p. 61.]

Now likewise sow the Seeds of *Polyanthos* very shallow upon some shady Border.

Mix *Anemomy* Seed with dry Sand; and sow them in very light Earth, allowing them a thin Covering of Mold well sifted.

We

We may still put into the Ground in some shady Place, Roots of the *Anemomy* and *Ranunculus* to blow late.

About the middle of the Month, give fresh Earth to your *Carnations* that were planted out in *Autumn*; these Flowers will blow much stronger than such as are planted out for blowing in *March*.

Turn and skreen Mold for the use of the next Month.

If the Weather be open, transplant all sorts of flowering Shrubs, which bear the Weather, viz. *Syringa*, *Lylac*, *Guilder Rose*, *Laburnum*, *Roses*, *Jasmine*, *Honeysuckle*, *Spirea's*, *Althea's*, &c.

Part and transplant *Pæonies*.

Towards the End, sow *Larkspurs*, *Holy-oaks*, *Canterbury-Bells*, *Primrose-Tree*, *Sweet-Williams*, *Annual Stocks*, *Candy-Tufts*, *Pinks*, and the *Scarlet Lichness*, especially if the Soil be light, but in stiff Soil we may delay that Work 'till about the tenth of *March*.

'Tis now a right Season to shift such *Myrtles* as want large Pots, at the same time shaving off the outside Fibres of their Roots, and, if they have occasion, prune their Heads pretty close.

Also about the End of the Month head *Orange-Trees*, and give them fresh Earth, always minding to wax those Wounds we have made, with Soft Wax. [See my *New Improvements*, Part III. p. 137.]

Stir the Surface of the Earth in your Pots in the Conservatory, but be not over-hasty in giving Air to your tender Plants, for they will not yet bear it. 'Tis now the time that many Exoticks perish through the Indiscretion of some Gardeners, who are tempted to open the Windows of the Green-House when the Sun shines a little favourably upon the Plants.

We may now make Layers of *Roses*, *Jessamines*, *Honeysuckles*, *Phillyrea*, *Laurus Tinus*, and other such like Shrubs.

Sow the Seeds of the *Laburnum*, *Spanish Broom*, and the Berries of *Bays*, *Yew* and *Holly*.

Sow Exotick Seeds from the hottest Climates upon Hot-beds, especially the Annual Kinds, which require

several Months and great Heat to bring them to perfection,

Now cut down the *Spanish Jessamine* within four Inches of the Stem, at the same time giving them fresh Earth.

Make Layers of the *Yellow Indian* and *Portugal White Jessamines*, *Pomegranates*, *Olives*, and *Arbutus*, minding to interr only the most tender Branches, for those which are once become woody will never take Root.

Sow *Orange* and *Lemon* Kernels in Pots, as soon as they are taken out of the Fruit, and set the Pots in Hot-beds.

Now make Plantations of the *Lilly of the Valley* on the side of some shady Bank.

Flowers now blowing in the Green-House and Flower-Garden.

WE have several Kinds of *Hellebore* yet flowering, the *Winter Aconite*, *Snowdrops*, chiefly that with double Flowers, *Crocus* both the *Yellow* and the *Purple* Kinds, some *Hyacinths*, single *Anemonies*, *Persian Iris*, single *Hepaticas*, single *Dafodils*, single *Wall Flowers*, some double *Dasies*, *Stock Gilly-flowers*, and the *Spring Cyclamen*; and in the Green-House the *Thlaspi Semper-virens*, some *Ficoides*, *Geraniums*, *Aloes*, and the *Yellow Indian Jessamine*.

Some *Oranges* also put out a few Blossoms, if they are not in good Health.

In the forcing Frames, at Mr. Miller's, a famous Nursery-Man at Northend near Fulham, we have now *Roses* and *Double Junquils* in Flower.

The *Mezerions* and *Laurus Tinus* yet remain in Blossom.

Works

MAR
Works



rous-r
Doub
Rose-C
Sun-fl
Willia
Sov
No
Work
plant.
Des

them
choic
Some
pleasu
Flowe
the in

No
Shelte
this M
shoul
from
Mats
least

Ab
Carna
out at
Work
of San
Melon

to be
Sov
are lef

Works to be done in the Green-House and Flower-Garden in MARCH.

OW is the best Season to sow *Poppies*, *Venus Looking-Glass*, and such other fine Annuals as we durst not venture in the common Earth the preceding Month. We may now also part or slip all Kinds of fibrous-rooted Plants that are not flowering, as *Gentianella*, *Double White Rockets*, *Scarlet Lichness*, *Cardinal Flower*, *Rose-Campions*, *Double Wall Flowers*, *Holyoaks*, perennial *Sun-flowers*, *Asters* of all sorts, *Monk's-Hood*, *Sweet-Williams*, *Sea Pinks*, &c.

Sow the Seeds of the *Stock-Gillyflowers*.

Now slip and set *Box* for *Edgings*, or in *Figured Works*; but take up no more in one Day then you can plant.

Defend your *Tulips* from *Blights*, which endanger them this Month. Make a Frame of Hoops over your choicest Bed, and cover it with Mats in bad Weather. Some have Coverings of Canvas to take off and on at pleasure, which they make use of as well to shade their Flowers in the time of their Bloom, as to help them against the injurious Frosts and Blasts.

Now mend and repair your Shelves and Places of Shelter for blowing your *Auricula's*, for at the End of this Month they should be set in order. This Place should face the East, and be defended on every other side from the Sun: The top should have a Covering of Bast-Mats or Canvas, to keep the *Auricula's* from Wet, for the least Rain imaginable spoils the Beauty of these Flowers.

About the Beginning of the Month transplant your *Carnation Layers* for blowing, if they were not planted out at *Autumn*, which is much the best time for that Work. Let the Earth for these Flowers be two thirds of Sandy Loam well incorporated with one third of rich *Melon Earth*, or rotted Wood: This Mixture ought to be at least two Years old before it is used.

Sow now upon the Hot-bed such Exotick Seeds as are less tender, and come sooner to Perfection than those

sown the last Month; such as the *Nastertium Indicum*, *French* and *African Marygolds*, *Balsamines*, *Convolvulus*, especially the little *Blew*, the *China*, or *Indian Pink*, and such others as would have been too rampant for the Hot-bed if they had been sown the last Month; for till the middle of *May* we cannot venture any of these abroad in the natural Ground; and therefore if they were to be sown early they would touch the Glasses long before we could give them Liberty enough.

If we have not the Conveniency of Hot-beds, we may defer the sowing of the *African* and *French Marygold*, the *Nastertium* and *Marvel of Peru*, till the next Month, and then they will come up in the natural Ground, if they are sown under some warm Wall.

Delay no longer to sow the Seeds of the *Humble* and *Sensitive* Plants upon the Hot-bed; they are wonderful Curiosities, but must always be kept under Glasses.

Now sow in the natural Ground the wild *Spiriting Cucumbers* and the *Noli me tangere*; they are diverting Plants when their Fruit is full ripe.

Give fresh Earth to your Pots of the *Campanula Pyramidalis*, and set them in some Pit where the Sun may come at them; this Method will make them grow tall, which is the chief Excellency of this Plant.

Now likewise sow their Seeds, and take off Slips from their Roots.

Plant *Tube-roses* in Pots of fresh Earth, giving them a gentle Heat, and no Water 'till they sprout.

Transplant now the *Arbor Jude*, and sow the Seeds of it.

Graff the *Spanish White Jessamine* upon the common *White English* sort.

Plant and make Layers of the *Passion-Tree* in moist Places, to make it bear Fruit.

Put such Exotick Plants into a Hot-bed as have suffered in the Conservatory, but take special Care they are well guarded from the Steam of the Dung by a due Thickness of Earth laid upon it.

Now transplant the *Amomum Plinii*, or *Winter Cherry*, prune their Roots and shorten their Branches, give them

them fr
Green-I
Air. N
they ha
will bea

Take

Trees th

a time

we may

to fall

ter'd,

Air.

Tov

Phillyn

the E

Min

In a

most f

Flowe

W

some

cus,

Dafi

ral k

Den

tilla

its v

we

T

Ar

still

fon

them fresh Earth, and set them in the Front of the Green-House, for they are hardy and will now bear the Air. *Note*, They are great Lovers of Water, and if they have Shade enough when they are set abroad, they will bear Fruit plentifully.

Take especial Care now of your *Orange* and *Lemon-Trees* that they don't want Water, give them little at a time and often; use them by degrees to the Air, and we may preserve their young Fruit, which is very apt to fall at this Season of the Year, if they are over-water'd, or are too hastily made acquainted with the Air.

Towards the End we may transplant *Yews*, *Hollys*, *Phillyrea*, and other *Evergreens*, and sow the Seeds of the *Evergreen Privet*.

Mind to water your Cases of *Auricula* Seeds.

In a warm Day begin to give a little Water to the most succulent *Ficoides*.

Flowers now blowing in the Green-House and Flower-Garden.

WE have now *Anemonies* both double and single, *Hyacinths*, *Funquils*, several kinds of *Narcissus*, and chiefly the *Narcissus of Constantinople*, some of the *Precoce Tulips*, and of the later kinds of *Crocus*, particularly the *white Polyanthos* of all sorts, *Violets*, *Daisies*, *Wall-Flowers*, *Stock Gilly-flowers*, *Iris's* of several kinds, *Hepatica's* of the double sorts, *Crown Imperial*, *Dens Caninus*, *Grape Hyacinths*, and some sorts of *Fritillaria*, a Flower now highly in request in *Holland* for its vast Variety (as I am informed) and toward the End we have some few *Auricula's*.

The Trees in Blossom are the *Almond*, *Abricot*, *Peach*, *Arbor Jude*, *Laurus Tinus*, some *Oranges*, and we have still some Flowers of the *Indian yellow Jessamine*, with some sorts of *Ficoides*, or *Fig-Marygolds*, and *Aloes*.

*Works to be done in the Green-House and Flower-Garden
in A P R I L.*



WE may begin this Month with sowing in the natural Ground the less tender Exotick Seeds, and such Flower-seeds as we have omitted to sow in the preceding Month. Many Seeds from the *Cape of Good Hope* and from *Virginia* will come up, being sown at this time of the Year in natural Borders well exposed.

We may now sow *Scarlet Beans*, *Scabious*, *Columbines*, *Marygolds*, *Gnaphalium*, and *Cyanus*.

We may now sow *Pine* and *Fir*-Seeds, covering them with a Net to keep them from the Birds, who are very voracious of them, even after they come up.

We may yet part and set all Fiberous-rooted Plants.

Now is the best time of the Spring to remove all sorts of *Evergreens*, putting large *Hollies* in Baskets for their greater Safety in Transportation; for *Hollies* at best have but few Roots, and can hardly hold their Earth without this Help. Plant their Baskets with them, but *Yews* will do well enough without this Charge, if they have been dug about in the Nursery, their Roots will be full of little Fibres, and will hold the Earth together.

Make fresh Hot-beds to forward your young Seedling *Oranges* and *Lemons*, and other Exotick Plants now come up, and fit to transplant from the first Hot-bed.

Pot some of your *Amaranthus Tricolor* and *Cockscombs*; give them a fresh Bed to draw them tall.

About the Beginning, your *Auricula* Seed will begin to appear above ground, if it has been carefully water'd, and be sure let it not want at this time, for the young Plants will soon wither. Keep those Cases in the Shade till *August* that we plant them out.

Begin now to water your *Aloes*, *Sedums*, *Torch Thistles*, *Euphorbiums*, and other tender succulent Plants, but give it in very small Quantities when the Sun shines hot, and now begin to use those tender Plants to the Air by little and little.

The

The Windows of the *Orangery* may now be open from Morning till Night, if the Winds are not very violent.

Stick up your *Carnations*.

After Rain clip your Edgings of *Box*, Roll your Grass and Gravel-Walks; also rake over and renew, if there is Occasion, your Walks of Cockle-Shells and Works in Sand, cut the Edges of your Grass, and mow it often, for now it grows apace.

Stake up all Plants and Flowers which are now grown to any Height, for the Winds are now dangerous.

Destroy Weeds before their Seeds are ripe.

The *Auricula's*, which are now in their full Bloom, should once in three Days be refreshed with moderate Waterings; the Flowers will be the better colour'd for it, and the Seed come to greater Perfection; but keep the Sun and Rain from them.

Flowers now blowing in the Green-House and Flower-Garden.

THIS Month furnishes us with great Variety of *Ranuncula's* and *Double Anemonies*, and towards the End we have some *Tulips*.

Dasies also still continue flowering, as do also the *Double Hepatica's* and *Polyanthos* of several kinds. We have several kinds of *Narcissus* and *Double Junquils* now in their Prime. The *Crown Imperial* is not yet past flowering, and we have now several sorts of *Iris* and *Fritillaries*, with some *Hyacinths*. We have also several kinds of *Cyclamen*, some *Stock Gillyflowers* and *Single Pæonies* towards the End; some *Double Violets* yet remain, but above all we are now rewarded with the *Auricula*, which is in its Prime about the 20th. The Trees and Shrubs now blowing are the *Lilac*, *Persian Jessamine*, *Laburnum*, *Double* and *Single-blossom'd Almonds*, the *Arbor Judæ*, some *Pears*, *Cherries*, and *Abricots*; and in the Green-House some *Oranges*, *Ficoides*, *Aloes*, and some kinds of *Geranium*.

Works

*Works to be done in the Green-House and Flower-Garden
in MAY.*



CUT down the Leaves and Flower-Stems of *Crocus*, and other bulbous-rooted Flowers that have done blowing, unless you design any of them to stand for Seed; and indeed I would advise every curious Person to save some of the best every Year, to have Nurseries of Seedlings of every Flower, for from such Seminaries we may expect numberless Varieties.

Gather now your *Anemonie* Seed as it ripens, for it is quickly carried away by the most gentle Air.

About the tenth is the best time to sow *Carnation* Seeds, for if they were to be put sooner into the Ground, they would grow woody before Winter, and many of them canker and go off. Let the Earth be fresh sandy Loam well sifted.

Our choice *Tulips* are now in Flower, and must be shaded from the Mid-day Sun, and defended from the Rain, if we are minded to have them last a long time in Flower; when they have done blowing, break off their Seed-Pods, that the Roots may gather Strength.

If any one has a mind to dry some of his choicest *Tulip Leaves*, he must provide Books of Brown Paper, and lay the Leaves of the Flowers singly between the Leaves of the Book; when they have been in this State for a Day press'd down by a very gentle Weight, they must be shifted into a fresh Book, and removed in like manner from one Book to another every 24 Hours, adding more Weight as they grow dryer: In fine, when all the Moisture is out of them, we may then stick them upon thick White Paper, with a little *Gum-Arabic* and fair Water, and they will hold their Colours for many Months. I the rather mention this way of drying Plants and Flowers at this time, because every Lover of *Botany* is not perhaps rightly skilled in preserving Specimens of Plants, and also because this Month affords

us greater Variety of Plants for that Purpose than any other Month in the whole Year.

Be, now careful to tie up the Spindles of your *Carnations*, lest they are broken by the Winds or other Accidents.

Repeat the sowing of many annual Flowers, such as the small *Annual Stock*, *Venus Looking-Glass* and *Candy-Tufts*, giving them frequent Waterings (if the Weather be dry) till they come up.

About the fifteenth, if the Weather be gentle and settled, which is (as some say) when the *Mulberry-Leaves* are as large as a Crow's Foot, bring your *Orange* and *Lemon Trees* out of the Conservatory. What I here mention of the *Mulberry's* indicating to us the proper time for bringing abroad our tender Plants, has, in my Opinion, Reason enough in it, (tho' some will not allow it as a sure Rule to go by;) for the *Mulberry-Tree*, which is a foreign Plant, and has a thicker Juice than any other Tree that I know of, requires (as we find) a settled Warmth and equal Temperature of Air to put its Juices into Motion; and as that Motion cannot in a few Days shew it self in the Production of the Leaves, and would stop upon the least Appearance of Frost, so of Consequence when we see the Leaves of this Tree arrived at the Largeness of a Crow's Foot, we may be assured the Weather has been for some time in a gentle State, and therefore our *Orange-Trees* may then come abroad with Safety; for we have had no Instance of Weather that has been capable of injuring the *Orange-Tree* after enjoying a serene Week in this Month. It is a thing worthy our Remark, how many different Degrees of Heat or Cold are necessary to the Vegetation of several Kinds of Plants. The Temper of Air in *January* pushes forth the Buds of the *Elder-Tree*; the greater Warmth in *February* puts the *Gooseberry-Bush* and some sorts of the *Quickset* in Motion; in *March* we see the Blossoms of the *Almond* and *Peach-Tree*; in *April*, the *Elm* and some others begin to open their Leaves, and the *Malberry* will not stir till the Weather of this Month is settled; and every Plant may

may perhaps require a distinct Degree of Heat or Cold (call it what we will) to make it vegetate. This is not unlike what we observe in Melting or Liquifying of Metalick and other Bodies. Ice will melt with less Heat than Tallow, Tallow with less Heat than Wax, Wax with less Heat than Rosin, Rosin than Lead or Tin, and these will melt with less Heat than other Metals.

Upon bringing out your *Orange-Trees* and other Exoticks, clean their Leaves from the Dust they have got in the House, unless a gentle Shower saves you that Trouble; give them also fresh Earth on the Surface of their Pots or Cases, and water them well when they are placed in the Order they should stand. Let not the Sun shine too hot upon your *Orange-Trees*, for that will make their Leaves turn yellow.

Now make Cuttings of *Ficoides* and *Sedums*, letting such of them as are very succulent lie a Day or two in the Sun after they are cut from the Plants, to dry the wounded Parts, and then plant them in an open Border to be potted after they have struck Root, which will be in less than two Months.

Plant Cuttings of the *Arabian Jessamine*, they easily take Root.

Plant Cuttings of *Geraniums*, and other such like Exotick Shrubs, in some open Border; they will take Root better there than in Pots.

About the tenth of this Month inarch *Orange* and *Lemon-Trees*, rather upon *Lemon* than *Orange* Stocks, they will make stronger Shoots: By this means we may have bearing Plants as small as we please in a very short time, for they may be cut from the Mother-Plants the middle of *August*.

Also now inarch the *Spanish White Jessamine*, and the *Indian Yellow Jessamine* upon strong Stocks of the common *White Jessamine*, and be not fearful that these will not take upon the Stocks, because our common *Jessamine* drops its Leaves, and the others do not; I have experienced the Truth of it, as well as the inoculating the
Laurel

Laurel upon the *Black Cherry Stock*, which grows very freely.

Such as are minded to build *Green-Houses* for the use of the next Winter, should not any longer delay that Work, lest the Walls be not thoroughly dry when the Plants should be set in; and I cannot help taking Notice also how much the Intent of such a Building ought to be regarded by the Architect; for hitherto I have not seen one *Green-House* in *England* which had the Beauty of a good Building, and good Convenience for the keeping of Plants at the same time, which is one Reason why Gentlemen have been discouraged from the Culture of Exotick Plants.

Towards the End of this Month, or the Beginning of the next, cut some Leaves of the *Opuntia* or *Indian Fig*, letting them lie two or three Days to dry, before they are set in the Ground. The Earth for them should be sifted Rubbish of old Brick Walls one third, to be mingled with light rich Earth well sifted. Set these Leaves about an Inch in this Earth, and let them remain abroad fifteen Days before you put them in a Hot-bed.

When the Weather is settled, transplant from the Hot-bed to the open Borders all your choice Annuals, as *Capsicums*, *African* and *French Marygolds*, *Amaranthus*, *Basils*, *Convolvulus*, &c.

Plant Cuttings of *Pyracantha* of the tender Shoots, and Cuttings of the *Passion-Tree* in moist Places.

Flowers now blowing in the Green-House and Flower-Garden.

OUR choicest *Tulips* are now in Flower, as also some *Stock Gillyflowers*, *Double Wall-Flowers*, *Monkshood*, *Single Scarlet Lichness*, *Double Pinks*, *Sweet-Williams*, *Double Yellow Globe-Flowers*, *Sea Pinks*, *Candy-Tufts*, *Venus Looking-Glass*, *Annual Stock*, *Perwinkle*, *Double Daisies* and *Featherfew*, *Foxgloves*, *Mulleins*, *Bulbous Iris*, some *Anemonies* and *Ranunculus* that were put late in the Ground, *Double White Rocket*,
Honey-

Honeysuckles, Piracantha, Syringa, Roses, Apple-Blossoms, Spireas, Spanish Broom, Guelder Roses, Laburnum, Canterbury Bells, Cytissus, Columbines, Larkspurs, Gladiolus, Poppies, Pæonies, Fraxinella, Spiderworts, Cyanus, Antirrhinum, Valerian, Martagons, Lillies, Orchis, Iris, Marygolds, some Lupines, Oranges, Ficoides, Aloes, Sedums, Geraniums; and in the Water-Tubs the Yellow Nymphaea or Water-Lilly, Pond-Weeds, Water-Ranunculus, the Flamula or Spearwort, and Frogbits.

Works to be done in the Green-House and Flower-Garden in JUNE.



IS now a good time to take up such bulbous Roots as have done blowing. Wash them clean as soon as you have taken them out of the Ground, and spread them upon Mats in the Sun, that they may be well dry'd before they are laid up in the House.

'Tis now the best Season to transplant the Roots of *Cyclamen, Saffron, and Colchicum.*

Now visit the Rivers, Bogs, Pools, Ponds, and Ditches for choice Aquatick Plants. We may transplant them, although they are Flowering, into our Water-Tubs, which make a very pretty Show among Exotick and other curious Plants. When you collect these Plants of the Waters, observe the Depth of Water they grow in, and allow them the same, if possible, when you plant them in the Tubs.

Lay such of your *Carnations* as are strong enough, and carefully pick off their weak and most tender Flower-Buds, for they rob the larger Pods of their Nourishment. The large-podded *Carnations*, which commonly burst, must now be help'd, especially after Nature of her self has split one Side of the Flower-Pod, open the other Side of the Pod opposite to it with a fine Penknife, but touch not the Petals or Flower-Leaves; this Method will make the Flower open equally without scattering, which

which
very D
Oxhoof
your C
lons an
because

Gath
it in th
Brin
and te
they h
Care t
them,

We
and T
Woun
Let t
the Ix

No
bout t
the f
abroad
Give
taken

W
a littl
Bloss
hardl
they
Co
other

Flow

V
glass
Lyck

which it certainly will do, if we were to split down every Division of the Pod. Also destroy Earwigs with *Oxhoofs* and *Tobacco-Pipes*; for the Way of guarding your *Carnations* from these destructive Insects with *Basons* and *Troughs* of Water, is of little Signification, because they have Wings, though not easily discover'd.

Gather *Auricula* and *Polyanthos* Seed, and preserve it in the Seed-Pods till you sow it.

Bring abroad your *Aloes*, *Torch-Thistles*, *Euphorbiums*, and tender *Tithymals*, and clean them from the Dust they have contracted in the House: Also pull off with Care the decayed Leaves of your *Aloes*, and transplant them, if there is Occasion, into bigger Pots.

We may now take off Cuttings of the *Euphorbium* and *Torch-Thistles*, letting them lie in the Sun till the Wounds are healed, before we put them into the Ground: Let the Earth for them be the same as I directed for the *Indian Fig*.

Now take off the Off-sets and Suckers growing about the Roots and Stems of your *Aloes*, plant them in the same Earth mention'd above, and let them remain abroad fifteen Days before they are set into a Hot-bed. Give these succulent Plants little Water till they have taken Root.

Water *Oranges* (which are now in Flower) frequently, a little at a time, that Fruit may set; and pick off the Blossoms where they are too thick. Now you can hardly give your *Myrtles* too much Water; remember they naturally grow in Marshy Ground.

Continue to transplant Annuals after Rain, and sow others to succeed those sown in the former Months.

Flowers now blowing in the Green-House and Flower-Garden.

WE have now blowing *African* and *French Mary-golds*, *Convokvolus*, *Female Balsams*, *Amaranthus*, *Larkspurs*, *Candy-Tufts*, *Venus Looking-glass*, *Annual Stocks*, *Stock Gillyflowers*, *Double Scarlet Lychness*, *Rose Campions*, *Sweetwilliams*, *Campanulas*, *Foxgloves*,

Foxgloves, Muleins, Moth Muleins, Sea-Pinks, Double Pinks, Virgins Bower, Perwinkle, Cyanus, Lillies, Mar-tagons, Monkshead, Sun-Flowers, Hollyhocks, Nastertium Indicum, Gentian, Virginian Spiderwort, Scarlet Beans, Sweet Sultan, Poppies, Pomegranates, Olives, Oranges, Lemons, Geraniums, Ficoides, Sedums, Fritillaria Crassa, Roses, Honeysuckles, Jessamine, Oleander, Spanish Broom, Hellebore, Indian Fig, some Carnations, Double-flower'd Featherfew, Valerian, Sea Ragwort, Orchis, Antirrhinum, Lupines, and China Pinks. In the Water-Tubs we have the *Double-White Nymphaea* or *Water-Lilly*, the *Single Yellow*, the *Water Violet* and *Water Milfoil* in Flower.

Works to be done in the Green-House and Flower-Garden in JULY.



E may yet continue to lay *Carnations* as they gather Strength, and often refresh them with Water, shading the Blossoms from the violent Heat of the Sun.

Continue to destroy Weeds, and cut down the Flower-Stems of such curious Flowers as have done blowing, unless they are worth saving for Seed.

Now is the best time to raise *Myrtles* of Cuttings, taking only the most tender Shoots; set them in the Shade, and give them frequent Waterings.

Transplant now such Bulbs as you took not out of the Ground the last Month.

We may sow *Tulip* Seeds, which are now ripe, in Cases of light Earth, that they may be carried under some Shelter in the Winter. Sow also some *Anemomy* Seed as directed in *February*, and sprinkle it often with Water.

Clip for the second time *Box-Edgings*.

Continue to make Cuttings of *Torch-Thistles, Indian Figs, Fig-Marygolds, Tythimals, Sedums*, and other succulent Plants.

Give

Give fresh Earth to the Surface of your *Orange* Tubs, which Work should be done at least four times a Year.

About the 20th inoculate *Oranges* rather upon *Lemon* Stocks than any other.

This is the time when the Berries of the *Coffee-Tree* ripen; they are then of a bright red Colour, and may be gather'd for sowing immediately, cleaning their Seeds from the Pulp: Set them singly about an Inch deep in Pots of fine Earth, and give them the Assistance of a Hot-bed, by which means they will sprout in less than six Weeks time, as I have seen at the Physick Garden at *Amsterdam*. This Plant being a great Rarity, see the Figure of it *Plate I. Fig. II.*

The Fruit of the *Ananas* being ripe about this time, cut off the Crown of Leaves which grows on the top of it, and plant it in light sandy Earth, it will presently strike Root with the Assistance of a Hot-bed.

We may also now lay down young Shoots of the *Arabian Jessamine*.

Tie up and prune all your Exotick Plants which grow disorderly; they will be cover'd with fresh Shoots before they are set into the House.

Gather such Flower-seeds as are now ripe, drying them well in their Seed-Vessels before they are beaten out, and even after that, dry them in the Sun for a Week or ten Days before you lay them up, for else they will be subject to rot.

Yet sow some Annuals in Edgings, to blow in *September*, for then the Garden wants Flowers.

Flowers now blowing in the Green-House and Flower-Garden.

THE *Carnation* is now the Glory of the Flower-Garden, and the Seedlings of that Flower offers something new every Day. The other Flowers now blowing are *Oranges*, *Lemons*, *Myrtles*, *Colutea's*, *Oleanders*, *Geraniums*, *Passion Flowers* of several Kinds, *Jessamine* of *Arabia*, *Brasil Jessamine*, common *White Jessamine*, *Pomegranates*; *Olives*, *Capers*, *Bean Caper*,
L *Ficoides*,

Ficoides, some *Aloes*, *Sedums*, *Dittany*, some *Roses*, *Amomum Plinii*, *Convolvulus*, *Amaranthus*, *African* and *French Marygold*, *Tulip-Tree*, *Golden Rod*, *Fritillaria Crassa*, *Apocinum* several sorts, *Asphodel*, *Tube-roses*, *Cardinal Flower*, *Double Scarlet Lychnis*, *Campanula's*, *Virgins Bower*, *Sweet Sultans*, *Cassia*, *Marvel of Peru*, *Female Balsams*, *Eagle Flower*, *China Pinks*, *Sun-flowers*, *Holly-hocks*, *Foxgloves*, *Everlasting Flowers*, *Scarlet Beans*, some *Double Poppies*, *Gentian*, *Fraxinella*, *Nastertium Indicum*, *Veronica*, *Nigilla*, *Chrysanthemum*, *Lupines*, *Stock Gillyflowers*, *Spiderwort*, *Indian Figs*, *Arbutus*, and some of the late sown Annuals.

Works to be done in the Green-House and Flower-Garden in AUGUST.



HE Beginning of this Month is a good Season for parting *Auricula's*, that they may gather sufficient Strength before Spring. Rather plant one single Head in each Pot, than covet many; for where we leave more than one upon a Root, we must expect the Blossoms will be small.

'Tis now a proper time to transplant your seedling *Auricula's* about five Inches apart, upon a Border of well sifted Earth; give them a gentle sprinkling of Water after planting, and shade them from the Sun with Mats for fifteen Days.

Now also transplant your seedling *Polyanthos* upon a shady Border, and divide the old Roots.

If we have any good Seeds of bulbous *Iris*, *Fritillaries*, and *Ranunculus*, it is now a very proper Season to sow them, covering the Seeds with a thin Coat of fine sifted Earth. Note, These and all other Seeds of bulbous Flowers, should have frequent Sprinklings of Water during the Summer Heats, and be cover'd with Mats in the Winter. Seminaries of this kind will reward our Patience with great Variety of beautiful Flo-

wers.

AUG. *the Green-House and Flower-Gardens.* 59

wers. Note also, The best *Ranunculus* Seed comes from *France*.

Shade your *Anemony* and *Tulip* Seed, which was sown in the preceding Month.

Plant *Single Anemonies*; and we may now transplant *Hyacinths*, *Narcissus*, *Lillies*, *Martagons*, *Crocus*, and *Snowdrops*.

Cut down the wither'd Stalks of such Flowers as have done blowing, and we may now part their Roots for Increase.

Gather Seeds in a dry Day.

The middle of the Month, or somewhat later, cut the inarch'd *Orange* Stocks from the bearing Trees, but be careful you do it gently, for fear of breaking the new grafted Branch from the Stock; leave the Clay upon them 'till the following Spring, and guard them from high Winds.

It is now a good Season to transplant *Myrtles* and *Orange* Trees, if that Work was not done in the Spring.

Use not your Cuttings of *Torch-Thistles*, *Aloes*, *Indian Figs*, &c. too tenderly in the Hot-beds; give them Air that they may harden against the Winter.

Plant Slips of *Pinks* in a Nursery, to plant out the following Summer.

We may now make Layers of all forts of Shrubs and Trees which remain abroad all Winter, always minding to lay down the most tender Shoots.

Towards the End take off and plant out such of your *Carnation* Layers as are well rooted; set them now in the Places where they are to blow, the Flowers will be much stronger than if they were to be planted in the Spring. Also in this Month we may lay such *Carnations* as were not strong enough in the former Month, but these will not be fit to transplant 'till *March* next.

Transplant seedling *Carnations* at a Foot distance.

If we find any old Roots of *Carnations* which are disposed to blow late, put them now in Pots of fresh Earth to set into the *Green-House* in *October*; I have often by that means had good Flowers the greatest Part of the Winter.

Now set into the House your *Aloes*, *Torch-Thistles*, *Euphorbiums*, and other such tender succulent Plants.

Flowers now blowing in the Green-House and Flower-Garden.

WE have yet some *Carnations*, with *Sun-flowers* and *Hollyhocks*, *Roses*, *Pomegranates*, *Arbutus*, *Jessamines*, the *Cinamon White*, *Spanish White*, *Brasil White*, *Indian Yellow*, and *Arabian Jessamine* both double and single, *Oranges*, *Myrtles*, *Oleander*, *Apocinum*, *Ficoides* of many kinds, some *Aloes*, *Passion-flowers* of various sorts, some *Sedums*, *Geranium*, *Tree-Mallows*, *Colutea*, *Guernsey Lilly*, *Tube-roses*, *Cardinal-flower*, *Female Balsam*, *Marvel of Peru*, *Chrysanthemum*, *Everlasting-flowers*, *Colchicums*, *Autumn Yellow Crocus*, *Cyclamens*, *African and French Marygolds*, *Convolvulus*, *Capficum*, *Starworts*, *Amaranthus*, *Nigilla*, *Sweet Sultan*, *Scabious*, *Nastertium Indicum*, *Linaria*, *Stock Gillyflowers*, *Eringo*, *Virgin's Bower*, and those *Annuals* sown late, *Annal Stock*, *Poppies*, *Larkspur*, *Candy-Tufts*, &c. Also we have double *Violets*, some *Auricula's*, and *Polyanthos*, which now feeling a Temper of Air equal to their natural blowing Season, (i. e. *April*) are led to bring forth their Flowers at this time.

Works to be done in the Green-House and Flower-Garden in
S E P T E M B E R.



YOU have now several kinds of Flowers rising to a considerable Height; therefore to prevent Hazards by the Winds, tie them carefully to Stakes, for if Plants are loose, a little Wind injures them.

If you have not in the preceding Month taken off your *Carnation* Layers, defer that Work no longer, but be sure to plant them in the Places where they are to blossom, you will find the Advantage by so doing.

Now

Now sow *Poppies*, *Larkspurs*, *Annual Stock*, *Candy-sticks*, and *Venus Looking Glass*, to stand the Winter, and blossom early in the Spring.

The first Week in this Month we may yet continue to plant *Evergreens*, such as *Hollies*, *Yews*, &c. if they come with good Roots, but *August* is much the better season.

Yet transplant flowering Shrubs of all sorts, and make layers of them.

We may still continue to transplant all Flowers which are fibrous rooted, and have done blowing. Also cut down the Flower-Stems of those which are to remain growing, within three Inches of the Ground.

'Tis now a good time to put into the Ground some *Anemomy* and *Ranunculus* Roots to blow early; let the Earth be a light natural Soil well sifted for the *Anemonies*, but the *Ranunculus* should have about half rotted Wood mixed with it.

About the End put in some *Tulips*, especially the Breeders, but give them not rich Ground, remembering always 'tis want of Nourishment is the Cause of Variations in Plants; therefore my Advice is to plant all breeding *Tulips* in Rubbish of old Buildings one half, and the rest natural Soil; or else set them about your Pyramid *Yews*, which have stood long enough to improve the Earth.

Now put into the Ground your *Junquil* Roots, and let them stand two or three Years in the same place.

Sow *Stock Gillyflowers* that you may have a Supply in the Spring, if the Winter destroys your old Stocks. They love a dry Soil, mix'd with Lime-Rubbish.

About the middle of the Month, house your *Orange Trees*, *Geraniums*, *Ficoides*, *Sedums*, and others of the tender Nature; but set them not in order 'till October, that you may bring in your *Myrtles* and such more tender Plants. Let the Windows of the House remain open Night and Day.

We may yet sow the Seeds of bulbous-rooted Plants, *Tulips*, *Anemonies*, *Ranunculus*, Bulbous *Iris*, *Martagon*, *Crocus*, and *Fritillaries*, in Pots or Cases of fresh natural Earth well sifted.

Flowers now blowing in the Green-House and Flower-Gardens.

WE have now in flower the common *White Jessamine*, the *Spanish White*, the *Indian Yellow*, and the *Brasil Jessamines*, *Geraniums* of several sorts, various kinds of *Ficoides*, *Leonurus*, *Passion Flowers*, some *Aloes*, *Thlaspi Semper-virens*, *Anomum Plinii*, *Guernsey Lilly*, *Golden Apples*, *Amaranths*, *Cyclamens*, *Colchicums*, *Antirrhinum*, *Chrysanthemum*, *Sun-flowers*, *Hollyhocks*, *Tube-roses*, *African and French Marygold*, *Double Violets*, *Marvel of Peru*, *Female Balsams*, *Convolvulus*, *Nastertium Indicum*, *Spiderwort*, *Scarlet Beans*, *Saffron-Crocus*, *Poppies*, *Larkspurs*, *Annual Stock*, *Venus Looking-Glass*, *Candy-Tufts*, *Stock Gillyflowers*, some *Carnations*, *Auricula's*, *Polyanthos*, *China Pinks*, *Myrtles*, *Monthly Roses*, *Asters* of several kinds, *Pomegranates*, *Arbutus*, *Oleanders*, *Colutea*, and *Capsicum Indicum*.

Works to be done in the Green-House and Flower-Garden in OCTOBER.



ABOUT the Beginning of this Month, house your *Myrtles*, *Anomum Plinii*, *Marum Syriacum*, *Mekianthus*, and such tender Greens, as remain yet abroad, at the same time giving them and all other House-Greens a fresh Covering of Earth, without disturbing their Roots: Tie up such as grow disorderly, and set them in their proper Places to stand the Winter, minding to set the most tender Plants, such as *Aloes*, *Torch-Thistles*, *Melon Thistles*, *Euphorbium*, &c. nearest the Sun, and the others which are more hardy towards the Back of the House. After the middle of the Month give no more Water to your tender succulent Plants, for they are subject to rot.

At the placing your Exoticks in the House, observe that only one third Part of the Floor be taken up with the Shelves for the Plants, so that there may be as much Vacancy left between them and the Windows, and

and the same Space between them and the Back of the House; this Proportion being observed, the House will not be so subject to Damps as if it was crouded, and there will be Air enough contained in it to nourish the Plants, if it was to be closely shut up a Month together.

When you water your housed Plants, let it be in the Morning when the Sun shines upon them.

Keep open the Windows of the House Day and Night till about the fifteenth, and after that time open them only in the Day-time.

Now make an end of putting in your *Tulips*, and plant also some *Anemonies* and *Ranunculus*.

Continue still to transplant and lay *Roses* and such like flowering Shrubs. Also plant the Cuttings of *Jessamine* and *Honeysuckle* in shady Borders, well wrought with a Spade, and be sure to bury at least two Joints of each Cutting in the Ground.

We may now sow the Berries of *Yew*, *Holly*, and such Evergreens as have been prepared in Earth or Sand.

Set your Pots of *Carnations*, which are now blowing, into the Green-House near the Door, where they may have the most Air. So also in the placing your Exotick Plants in the House, let the most tender stand the most remote from the Door; the more hardy will bear the Air, especially the *Ficoides*; but use none of them with too much Tenderness, for more Plants have been kill'd with too much Care than have been preserved.

Flowers now blowing in the Green-House and Flower-Garden.

WE have now flowering some *Oranges*, *Myrtles*, *Geraniums*, *Amomum Plinii*, *Golden Apple*, *Aloes*, *Ficoides*, or *Fig-Marygolds*, *Leonurus*, *Apocinums*, *Spanish Jessamine*, *Indian Yellow Jessamine*, *Brasil Jessamines*, *Common Jessamine*, *Thlaspi Semper-virens*, *Pomegranate*, *Arbutus*, *Anemonies Single*, *Polyanthos*, *Carnations*, *Stock Gillyflowers*, *Asters*, *Antirrhinum*, *Amaranths*, *Double Violets*, *Saffron-Crocus*, *Colchicum*, *Monthly Roses*, several sorts of *Cyclamen*, *Passion-Trees* of several kinds, *African* and *French Marygolds*, *Marvel of Peru*,
L 4 *Capsicum*,

Capficum, Single Wall-flowers, and some Bulbs from the Cape of Good Hope, Heart's-ease, or Viola Tricolor.

Works to be done in the Green-House and Flower-Garden in
NOVEMBER.



IN this Month, if the Weather is not very severe, open the Windows of your Green-House a little, especially if the Sun shines, and at the same time give Water to such Plants as require it. Let all the Water you use to the housed Plants be as simple as possible, for Mixtures of Dungs, or other hot Ingredients, spoil your Plants.

If Frosts should begin to set in, make a small Fire of Charcoal, and when it burns clear, hang it up near the Windows; but do this only at Night: Or indeed if you had the Conveniency of one of those Chimnies improved by the Reverend and Learned Mr. *Disaguliers*, it might be set to Work upon this Occasion; 'tis much the best Invention that I know of for warming a Green-House.

In this Month lay up Heaps of Earth for your several sorts of Flowers, and make the proper Mixtures for the several Exoticks, as I have directed in the former Months. Where the Ground is too stiff, and we desire a natural Mixture, to bring it to the State of Loam, we must add to it a sufficient Quantity of Drift or Sea-Sand.

Now lay down your *Auricula* Pots upon their Side, the Plants towards the Sun, for much Wet rots their Leaves, and the Frost is very injurious to them.

Shelter your young seedling Bulbs from the Frost, but give them Air every Day, or they will go off.

If the Weather be open, we may yet transplant *Roses, Jessamine and Honeysuckle, Syringa and Lylac.*

Now cut down the Stalks of Flowers that have done blowing, within three Inches of the Root; I mean such

as

DEC.
as blow
have th
Un-
them
we ma
Tie
of this
at libe
Wo
quils,
into

Flowe

T
now
Whi
Tree,
Aloe.
Leon
Aner
and

Wo



wo
we
ou
fo
to

as blow tall, for *Saffron*, *Cyclamen*, and *Colchicum*, must have their Herbage preserved till it naturally decays.

Un-nail your *Passion-Trees* from the Wall, and lay them upon the Ground, that when severe Frosts come, we may cover them with Straw.

Tie up all Trees and Shrubs to Stakes, for the Wind of this Season breaks and destroys such as are loose and at liberty.

We may about the Beginning, plant *Hyacinths*, *Junquils*, and *Narcissus*, *Polyanthos* in Pots, and plunge them into Hot-beds to blossom about *Christmas*.

Flowers now Blowing in the Green-House and Flower-Garden.

THE *Strip'd Lilly* is now so beautiful, that I cannot help taking Notice of it among the Flowers and Ornaments of this Month. We have now Blowing *Laurus Tinus*, some *Myrtles*, *Spanish White Jessamine*, *Yellow Indian Jessamine*, *Candy-Tuft-Tree*, *Geraniums*, *Ficoides*, some *Carnations* in the House; *Aloes*, the *Amomum Plinii*, with its pretty Scarlet Fruit, *Leonurus*, the *Golden Apples*, some *Passion-Flowers*, *Single Anemonies*, *Gentianella*, some *Polyanthos*, *Stock Gillyflowers*, and *Double Violets*.

Works to be done in the Green-House and Flower Garden in
DECEMBER.



AS no Plant can live without Air, a Gardener must now act with Judgment in helping his *Green-House Plants*; for the Air Abroad is now so sharp, that was it to be let into the House immediately upon the Plants, it would pinch many of them to Death; and if the Plants were to be shut up for any considerable Time, without recruiting the Air in the House, they would be suffocated; it is therefore advisable to provide some Means to recruit the Air in the House, from Time to Time,

as

as there is occasion, with fresh Air, corrected in such a manner, that it may feed the Plants without pinching their Rind or Bark, as the Air Abroad at this Season would do, if it was suffer'd to blow immediately upon them without Correction. Therefore, at the End of every *Green-House*, there ought to be an Antichamber, thro' which we ought to pass in the Winter, and not by the common Door or Windows in the Front: The Chamber which I now speak of is recruited with fresh Air from Abroad every time we go into it; and upon opening the Door of that Room into the *Green-House*, the Air there mixing with the other, which has been pent up, impregnates it with new Parts, which contribute to the Vegetation or Growth of Plants: Now to explain what I mean by these Parts in the fresh Air, which are necessary to the Growth of Plants, I must have Recourse to some Experiments which have been made upon Air, with respect to the Nourishment of Animals, who are in many things analogous to Plants: For Example, a Man who goes into a Diving-Tub, where he is closely shut up from Air, except only what the Tub contains, will after a little Space find the Air grow hotter and hotter, 'till at length he is in Danger of being suffocated, and can have no Relief but by the Admission of fresh Air: This shews us that in Air, there is some particular Quality which is necessary to preserve Life in Human Bodies, and when that Quality is exhausted, the remaining Air becomes useless: So every one who knows but little of the Nature of Plants, has certainly taken Notice, that a Plant, which has for some time been debarr'd from Air, turns sickly, loses its Verdure, and often languishes beyond Cure. But again, we have another Experiment tending to confirm the former, further explaining what that Quality is in the Air, which is necessary to maintain Humane Life, which seems to be the same, which is necessary to maintain Fire or Flame: A lighted Candle, for Example, being set under a Bell, closely fix'd upon a Table, will burn perhaps a Minute or two in Proportion to the Quantity of Air pent up with the Candle in the Bell; but

but as soon as the Quality in that Air, which is necessary to feed the Flame, is exhausted, the Candle goes out: This has been try'd too often to admit of any Dispute, that the Candle goes out by Chance; and we find that by letting into the Bell some fresh Air, a little before the Candle should have gone out, it will still continue burning; and then to shew that this Quality in the Air is the same which feeds the Life in Humane Bodies, it was try'd, whether the Air, returning from the Lungs, would not have the same Effect upon the Candle, as the External Air had before, but it had not; the Candle went out at its usual Time. Thus it seems, when we suck in Air for Breath, the Lungs takes what is necessary for the Nourishment of our Bodies, and returns back the rest. But I believe I have said enough to explain what I design'd, in prescribing the letting in of fresh Air, at every Opportunity, into the Green-House, and shall now proceed.

Give little Water to your Green-House Plants, and be sure remember this Rule, that *Aloes, Euphorbiums, Indian Figs, Melon Thistles, Torch Thistles* and *Sedums*, have none at all 'till *March* is almost out.

Provide Shelters for your tender Flowers, such as choice *Anemonies* and *Ranunculus*, for now the great Frosts begin.

Be not over hasty in warming your Green-House with Artificial Heats, but let in as much Sun as possible; rather study to keep the Frost from your Plants, than make them grow, for untimely Shoots spoil Plants.

Pick off dead and rotted Leaves from your *Exotick Plants*, for they soon infect the whole.

Flowers now Blowing in the Green-House and Flower-Garden.

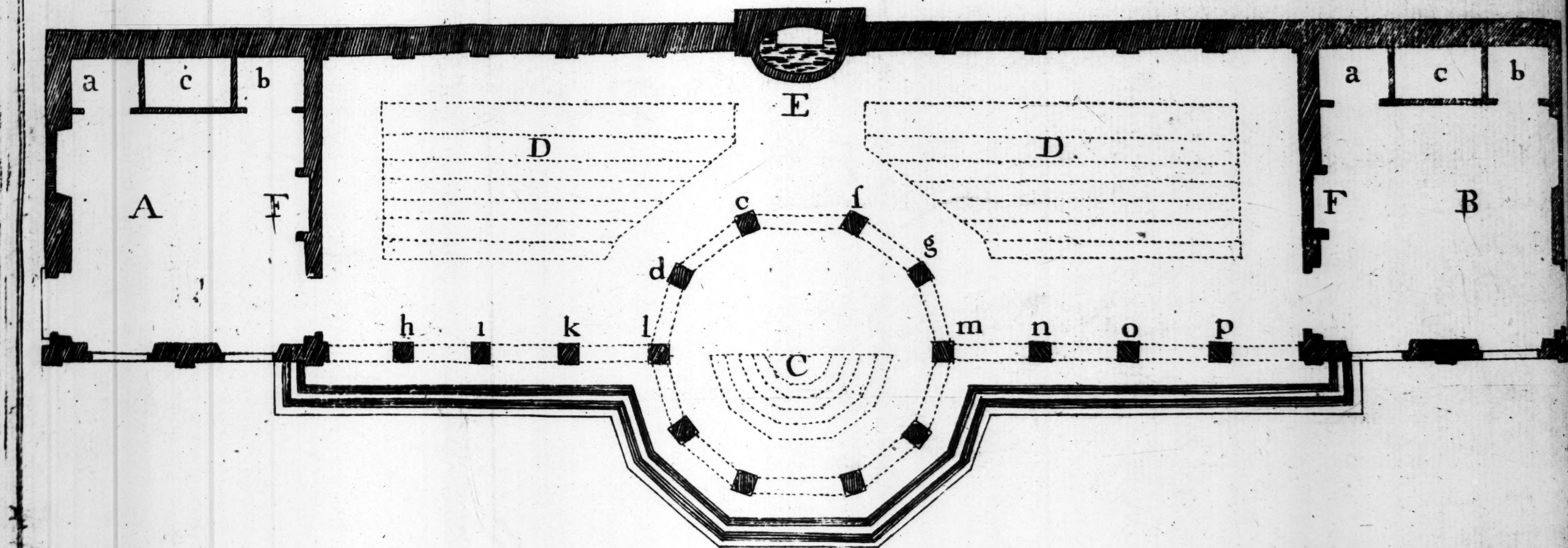
THE Leaves of the *Strip'd Lilly* are now very beautiful, equal to any Flower. We have now in Flower the *Laurustinus*, the *Glastenbury Thorn*, *Geraniums*, *Candy-Tuft-Tree*, or *Thlaspi Semper-virens*, *Yellow Indian Jessamine*, *Spanish White Jessamine*, *Cyclamen*,

clamen, *Ficoides*, *Aloes*, single *Anemonies*, *Stock-Gilly-flowers*, single *Wall-Flowers*, *Antirrhinum*, *Common Primroses*, *Polyanthos*; and in Fruit, the *Arbutus*, or *Strawberry-Tree*, *Anomum Plinii*, *Golden Apples*, *Oranges*, *Lemons*, *Citrons*, *Pyracantha*, *Olives* and *Pomegranates*; and in our *Hot-Beds* we have some *Hyacinths* and *Narcissus*. We have now also in Flower the *Black Hellebore*, some *Snowdrops*, and the *Winter Aconite*.

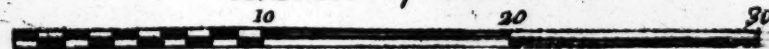


A DESCRIP-

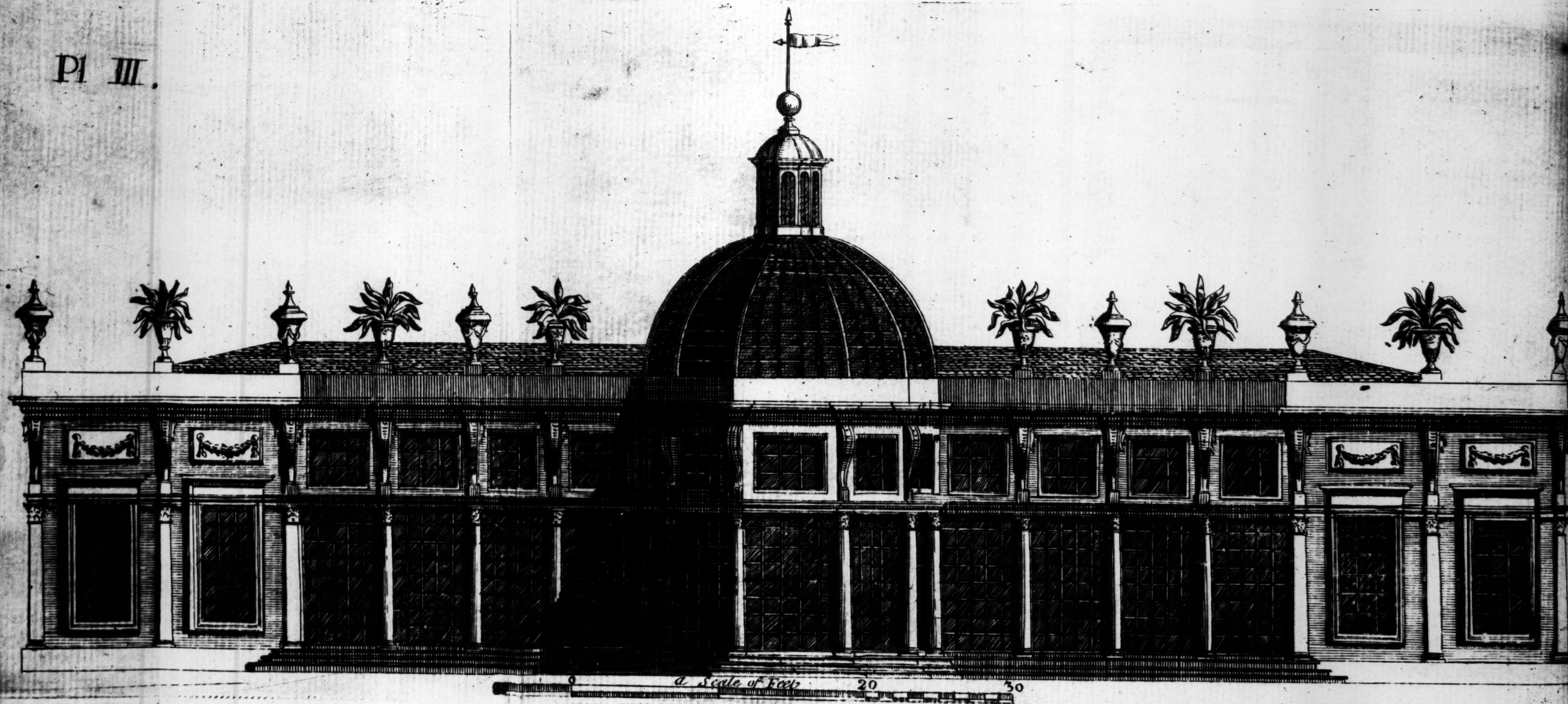




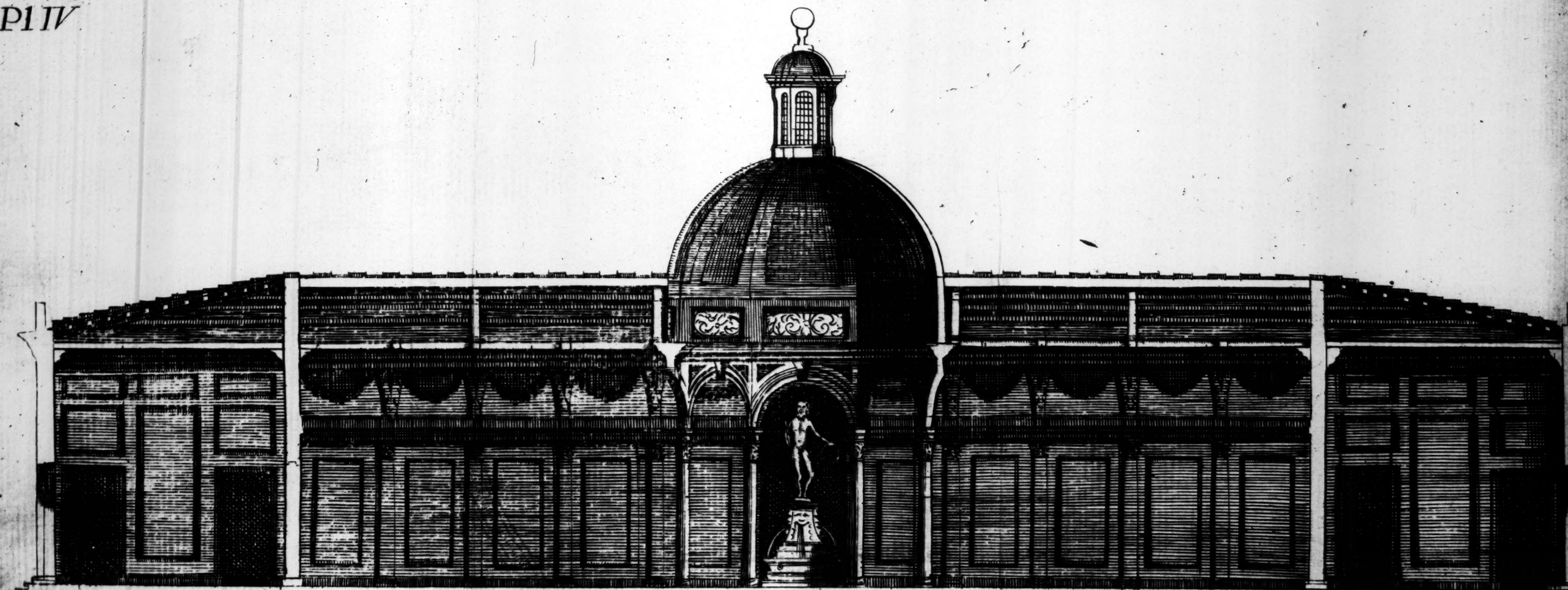
A Scale of Feet



PI III.



P1 IV



A Scale of Feet



A
DESCRIPTION
OF A
GREEN-HOUSE,

CONTRIVED

For the good keeping of *Exotick* PLANTS in the *Winter*;
the *Designs* by *Seignior GALILEI* of *Florence*.



S I conceive the little Regard for *Exotick* Plants is chiefly owing to the Difficulties which Gentlemen have met with in preserving them in the Winter, so I have endeavour'd to lay down such Rules for their Management, as may render the Manner of their Culture easy and familiar to every Lover of those Rarities; and when I consider how much the Beauty and Advantage of the *Orangery* is owing to the good Condition of the *Conservatory*, I am the less surpris'd to meet every Day with valuable Collections of Trees half poisoned with Charcoal, or pinch'd to Death with the Frosts; and all this is owing to the ill Contrivance of our *English* Green-Houses, as I have mentioned in my *New Improvements*, Part III. Pag. 127. 'Tis therefore I have consulted with *Seignior Galilei*, a most skilful Architect, about composing such a Green-House as might be agreeable to the Rules of Architecture, and at the same time be rightly adapted to the Welfare of Foreign Plants.

Plate

Plate II. is the Plan or Ground-Plat of a Green-House, which will be sufficient with the following Directions to explain the III^d and IVth Plates.

A and B are two Rooms at the Ends of the Green-House for the Use of the Gardener, or to be employ'd otherwise as our Fancy directs. These Rooms are Passages into the Green-House in the Winter, that the cold Air may not directly be let in upon the Plants; *ab* in these Rooms are places for Seeds, Instruments, Papers, Books &c. and those mark'd *c c c* for Beds.

G in the half *Decagon* are Benches for the most tender Plants, such as *Aloes*, &c. This Place is appointed for those Plants, because they may enjoy the Sun from its Rising till it sets; and the *Cupola* being all Glass towards the South, will still contribute to give them more of the Sun's Warmth, but the Pillars *d e f g*, which support half the *Cupola*, may be left out or kept standing at Pleasure; they will be Ornaments when the Plants are in the House, but are of no great Use in supporting the *Cupola*; the Roof alone may bear up that Part of it.

The Pillars *h i k l m n o p* are of the *Corinthian* Order, as are the others which support the *Cupola*; they are so disposed as to let the Sun pass into the House with very little interruption, which is the chief thing to be considered in the Contrivance of a Green-House.

The Sashes of Glass must be of equal Height with the Pillars, and be so disposed, that they may slide easily in their Frames up and down, as we have Occasion to give Air to the Plants in the House; and they must also be so contrived, as to be flung up into the Freeze when the Plants are out of the House, so as to leave the Front open like a *Portico* or *Colonnade*.

The Windows also of the Freeze must be made to slide down when we are disposed to let in Air at the top of the House, which is often necessary.

The Sash-Frames likewise from the Pillar *i* to *o*, may be made to run in Grooves, like the Scenes in a Theatre, so that we may inclose the *Semi-Decagon* when we give Air to the others which are more hardy.

DD are

DD
Plants,
so disp
venien

E is
the Pl
will b
that i
broug
but ra
to ju
Win
mer v
ment

F
the F
warm
thes
entit
this
for t
the
do t
Seal
Cup
the
pla
nio
and

DD are the Benches for the most hardy Green-House Plants, such as *Oranges, Lemons, Myrtles, &c.* They are so disposed as to admit of Walks about them for Convenience of Watering.

E is a Grotto and Fountain, very useful for watering the Plants in the Winter, for the Water in that Basen will be so temper'd with the warm Air of the House, that it will be nourishing to the Plants, which Water brought directly from without Doors would not be, but rather prove injurious to them; and I leave every one to judge how great an Ornament this will be, as well in Winter when the Plants are in the House, as in Summer when the House will be made a Room of Entertainment.

FF are two Chimneys, which serve as well to warm the Rooms at the End of the Green-House, as to convey warm Air among the Plants. [See the Contrivance of these Chimneys in the Reverend Mr. *Disaguliers's* Book, entitled, *Fires improved.*] A Green-House contrived after this manner has little need of Shutters to the Windows, for the Sun, and Heat from the Chimneys will always keep the Air in the House so warm, that the Frosts cannot do the Plants any Damage; but in the most rigorous Season we may only cover those Windows in the half *Cupola* with Straw Mats, for the Plants there are of the most tender Sorts. Thus I have endeavoured to explain the Use of this Green-House, which is so ingeniously disposed by Seignior GALILEI: See the *Section* and the Upright of it, *Plate III.* and *IV.*

F I N I S.



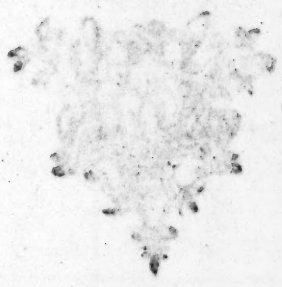
71
 In the Description of a Green-House.
 I.D. are the Benches for the most hardy Green-House
 Plants, such as Orange, Lemon, &c. They are
 disposed as to admit of Water about them for Con-

venience of watering.
 I have a Gravel and I maintain very useful for watering
 the Plants in the Winter, for the Water in that Season
 will be so tempered with the warm Air of the House,
 that it will be nourishing to the Plants, which Water
 brought directly from without Doors would not be,
 but rather prove injurious to them; and I leave every one
 to judge how great an Ornament this will be, as well in
 Winter when the Plants are in the House, as in Sum-
 mer when the House will be made a Room of entertain-
 ment.

I.E. are two Chimneys, which serve as well to warm
 the Rooms at the End of the Green-House, as to convey
 warm Air among the Plants. See the Contrivance of
 these Chimneys in the Account Mr. Dyke's Book,
 entitled, *How to warm a House*. A Green-House contrived after
 this manner has little need to the Windows,
 for the Sun and Heat from the Fire will always keep
 the Air in the House so warm, that the Plants cannot
 do the Plants any Damage; and the most rigorous
 Season we may only cover them with Windows in the half
 Circle with Straw Mats, for the Plants there are or
 the most tender Sorts. Thus I have endeavoured to ex-
 plain the Use of this Green-House, which is to be
 mostly disposed by Section G. A. I. E. I. See the Plans
 and the Description of it, Plate III. and IV.



P L I N I U S



I
 P
 M
 G
 W
 f
 F
 v
 o
 H
 e
 I
 C
 —
 —
 —
 By
 —
 Pri

NEW
IMPROVEMENTS
OF
Planting and Gardening,
BOTH
Philosophical *and* Practical:
Explaining the
MOTION of the SAPP
AND
GENERATION of PLANTS.

With other Discoveries never before made Publick,
for the Improvement of FOREST-TREES,
FLOWER-GARDENS, or PARTERRES;
with a New Invention whereby more Designs
of GARDEN-PLATTS may be made in an
Hour, than can be found in all the Books now
extant. Likewise several rare Secrets for the
Improvement of FRUIT-TREES, KITCHEN-
GARDENS, and GREEN-HOUSE PLANTS.

Adorn'd with COPPER PLATES.

PART III. and Last.

The Third Edition.

By RICHARD BRADLEY, Fellow of the
ROYAL SOCIETY.

DUBLIN:

Printed by and for GEORGE GRIERSON, at
the Two Bibles, in Essex-Street. M.DCC.XXI.

IMPROVEMENTS

Plumbing and

Philosophical and

MOTION OF THE

ATTENTION OF



OF THE

P A T H

OF THE

ROYAL

OF THE

OF THE

C
O

Sect. 1
Sect. 1

Of Ken
Sect. 1
Sect. 1
Sect. 1

Observ
and

Of the
bern

Of Me
Sect.

Of Es
Sect.
Sect.
Sect.
Sect.
Sect.
Sect.
Sect.
Sect.
Sect.
Sect.
Sect.

Of A
ana
P A

CONTENTS of the *Third Part.*

Of FRUIT-TREES.	C H A P. I.	
O f the Vine, Fig, L'Azzeroles and Mulberry,		p. 1
Sect. I. Of the Vine,		p. 2
Sect. II. Of the Fig,		p. 11
Sect. III. Of the L'Azzeroles,		p. 12
Sect. IV. Of the Mulberry,		ibid.

C H A P. II.

Of Kernel-Fruit, as the Apple, Pear, Medlar, Quince,		p. 14
Sect. I. Of the Apple-Tree,		ibid.
Sect. II. Of the Pear,		p. 18
Sect. III. Of the Medlar and Quince-Tree,		p. 23

C H A P. III.

Observations and Experiments relating to the Propagating and Culture of Stone-Fruit-Trees,		p. 23
--	--	-------

C H A P. IV.

Of the Goosberry, Currant, Strawberry, Raspberry, Berberry and Philbud.		p. 29
---	--	-------

C H A P. V.	Of Blights,	p. 34
-------------	-------------	-------

Of the KITCHEN-GARDEN.

C H A P. I.	Of the Hot Bed,	p. 65
-------------	-----------------	-------

C H A P. II.

Of Melons, Cucumbers and Mushrooms, their Culture,		p. 70
--	--	-------

Sect. II. Of Mushrooms,		p. 77
-------------------------	--	-------

C H A P. III.

Of Esculent Roots, or such as are proper for Table Use,		p. 80
---	--	-------

Sect. I. Of the Parsnip,		p. 81
--------------------------	--	-------

Sect. II. Of the Carrot,		ibid.
--------------------------	--	-------

Sect. III. Of the Turnip,		p. 82
---------------------------	--	-------

Sect. IV. Of the Skirret,		p. 83
---------------------------	--	-------

Sect. V. Of Scorzonera and Beets,		ibid.
-----------------------------------	--	-------

Sect. VI. Of the Radish,		p. 84
--------------------------	--	-------

Sect. VII. Of Horse-Radish,		ibid.
-----------------------------	--	-------

Sect. VIII. Of Potatoes,		p. 85
--------------------------	--	-------

Sect. IX. Of the Onion		ibid.
------------------------	--	-------

Sect. X. Of the Leek.		p. 87
-----------------------	--	-------

Sect. XI. Of Garlick,		ibid.
-----------------------	--	-------

Sect. XII. Of Eschalots,		p. 88
--------------------------	--	-------

Sect. XIII. Of Chives and the Rocambole,		ibid.
--	--	-------

C H A P. IV.

Of Asparagus, Artichokes, Colly-Flowers, Cabbages, and others of the Cole-Race,		p. 89
---	--	-------

CONTENTS, &c.

Sect. I. <i>Of the Artichoke,</i>	p. 92
Sect. II. <i>Of the Colly-Flower,</i>	p. 93
Sect. III. <i>Of Cabbages, and their Kinds,</i>	p. 96
C H A P. V.	
<i>Of Legumes or Pulse; such as Beans, Peas, Kidney-Beans, &c.</i>	p. 97
Sect. I. <i>Of Beans,</i>	ibid.
Sect. II. <i>Of Pease,</i>	p. 99
Sect. III. <i>Of the Kidney-Beans, or French-Bean,</i>	p. 101
CHAP. VI. <i>Of Sallets, their Culture,</i>	p. 102
Sect. I. <i>Of Small Herbs,</i>	p. 103
Sect. II. <i>Of Sellery and Endive</i>	p. 104
Sect. III. <i>Of the Cabbage-Lettuce,</i>	p. 105
Sect. IV. <i>Of Burnet, Corn-Sallet, Purslane, Spinage and Taragon,</i>	p. 106
C H A P. VII.	
<i>Of Pot-Herbs, and those commonly used for Stilling,</i>	p. 108
C H A P. VIII.	
<i>Of Engines for raising of Water, with some Observations and Experiments for the meliorating of Water for the Use of Gardeners.</i>	p. 111
C H A P. IX.	
<i>Of Water Plants, whether Domestick or Foreign, the Manner of Propagating them in our Gardens.</i>	p. 122
Of the Green-House, and Exotick Plants.	
C H A P. I.	
<i>Of the Green-House, or Conservatory; with Directions for Sowing Exotick Seeds, and the best Method of Ga- thering them abroad for Transportation, and the Manner of Packing them up.</i>	p. 126
CHAP. II. <i>Of Orange and Lemon-Trees, and their Culture.</i>	
C H A P. III.	
<i>Of Myrtles, Jessamines and Geraniums, their Culture, &c.</i>	(p. 137)
C H A P. IV.	
<i>Of the Melianthus, Oleander, Malabar-Nut, Leonurus, Amomum Plinii, Capser, Acacia, Apocinum, and other Exotick Shrubs, which are not succulent, their Culture,</i>	(p. 145)
C H A P. V.	
<i>Of Aloes, Torch-Thistles, Melon-Thistles, Fig-Mary- gold, House-Leeks, the Euphorbium, and other Suc- culent Exotick Plants, their Culture.</i>	p. 169
CHAP. VI. <i>Of the Generation of Plants,</i>	p. 182
NEW	



I M

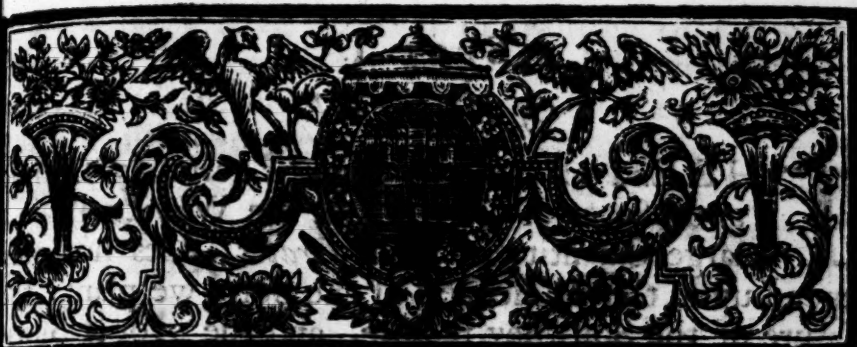
PH

Of the



ing th
which
is haro
Garde

P A



NEW IMPROVEMENTS

OF

Planting and Gardening,

BOTH

Philosophical and Practical.

PART III.

CHAP. I.

Of the VINE, FIG, L'AZZEROLE, and MULBERRY.



THE FRUIT I shall first treat of is known all over the civiliz'd Part of the World; and its Qualities more generally admir'd than any other Fruit growing upon the Face of the Earth: And yet notwithstanding the vast Tracts of Ground in *Europe* and elsewhere, which are found planted at this Day with *Vines*, there is hardly any Plant so unskilfully order'd in our *English* Gardens, or so little understood by our Gardeners.

PART III.

B

SECT.

SECT. I.

Of the *VINE*.

THE End of planting *Vines* is certainly to have good Store of *Grapes*; but the Way to attain a large Quantity of good *Grapes*, does not only depend upon the Choiceness of the Sorts we plant, the Nature of the Soil they require, and the proper Situation for them; but above all, the Times and Methods of pruning are absolutely necessary to be understood.

THE Kinds which I find to ripen best in England are, the *July Grapes*, the *Black Currant Grape*, the *Early sweet Water Grape*, lately brought from the *Canaries*, the *Arbois* or *French sweet Water Grape*, which are all ripe with us by the middle of *August*, if rightly managed, and the Season be kind; and after them the *Muscadines*, *Parsly Grapes*, *Fronteniacs* *Claret* and *Burgundy Grapes*: I have seen all these in great Perfection with us, but I know not of any other Kinds early enough to ripen well in our Climate.

'Tis then of these Kinds I would chiefly advise to be propagated, which may be done either by laying down the young Branches as soon as the Fruit is gathered, or by making Plantations of Cuttings at that time, always minding to let a Bud or two of the Layer or Cutting be under Ground; for it is from those Buds only the Roots put forth. I have also frequently made Layers in *March* and *April*, which have been fit to transplant the *Michaelmas* following; and I have known it practis'd to draw a young Branch thro' the Hole at the Bottom of a Garden-Pot about *Christmas*, and then filling the Pot with Earth, it has took Root and been cut from the Mother-plant the *Michaelmas* following, with ripe Fruit growing upon it. The *Vines* thus raised in Pots, will hold their Fruit good almost 'till *Christmas*, if they are shelter'd from the Weather in a Green-house or some such like Place; and it is easy to conceive how pleasant it will be to have them brought thus growing to the Table in a Day.



By

By what I have observ'd in planting of *Vines*, the Month of *February* is the best, if the Weather be open; and great Care must be taken in the Removal of this Plant, that the Roots be not too dry before it be replanted, for that would greatly endanger it: Therefore wet Moss wrapp'd about the Roots, if they are to be sent to any remote Place, has been practis'd with good Success.

Concerning the Soil proper for *Vines*, I shall give the first Hint from that ingenious and candid Piece of Mr. *Laurence's*, where with so much good Reason he tells us, that he cannot easily be brought to think any Soil or Situation can be too dry for the Roots of the *Vine*, after having seen at *Barnwall* near *Oundle* in *Northamptonshire* a flourishing *Vine* grow from between the Joints of an old Castle-Wall near 20 Foot high from the Ground, which he was told produced admirable *Grapes* when it was well managed. This Observation of that curious Gentleman might be sufficient of its self to inform us of the Property of the Soil requir'd for *Vines*, without seeking after other Experiments to satisfie us in it.

In the Gardens of my worthy Friend Mr. *Balle* at *Camden-House*, there are now growing several *Vines* in the Walls, some of which were planted there by that Gentleman's Direction; and one in particular, which is a *Muscadine*, produces every Year fairer Bunches of *Grapes*, much sweeter, and earlier ripe (at least a Fortnight) than any other *Vines* in his Garden, altho' he has the best Collection of forward *Grapes* I have yet met with in *England*.

But yet farther, if we take a View of the *Vineyards* abroad, which afford the richest and best Wines, we find the Soil either rocky or gravelly. The *Chianti* Wine of *Italy*, for Example, grows upon a high Ground in a rocky Soil like to that which they make Lime of; and the strong *Spanish* Wines are the Growth of the Mountains, which will hardly produce any other Kind of Plant, they are so extreemly dry: In a Word, all the Places which I have seen or heard of, which produce

duce good Grapes, have a dry, hot Soil, and are somewhat Mountainous.

From such Observations, and some Experience I have had in the Culture of the *Vine*, I find chalky Hills, such as are frequent enough in *Oxfordshire*, are very proper to plant *Vines* upon, if they lye well expos'd to the Sun; So, hot gravelly Ground which lies dry and warm, will produce better Grapes than any of the rich Soils prepar'd with Horse-dung; but in a Garden where either of these Soils are wanting, the Rubbish of some old Building will very well supply the Defect, if it be well sifted and mix'd (about one third part) with the Earth about the Roots of the *Vines*.

I think I need not say how much the ripening of some Sorts of Grapes depends upon a good Wall, and warm Exposure, and that even with those Helps, we sometimes fail of ripe Grapes. It may not be amiss then, to consider of some Ways that may expedite the budding out of the *Vines*, and consequently by making them blossom earlier than usual, may hasten the Growth and Ripening of the Fruit while we enjoy the Summer Sun.

As the proper Soil and right Exposure for *Vines* contributes to the early ripening of Grapes, so the right Season for general pruning likewise is helpful to the speedy perfecting of the Fruit, as I shall shew afterwards; but shall first take notice of an Observation or two of *Vines*, that were made to shoot near two Months sooner than Nature would of her self have given them Motion. In *Kensington* I have observ'd a *Vine*, that happen'd to be planted against a Baker's Oven, to sprout in the Beginning of *March*, and continue from that time to shoot vigorously all Summer; and although it had very little Advantage of the Sun's Heat, and grew in a stiff wet Ground, the Grapes ripen'd much sooner than any others of the same Kind: But at the *Pot-House* at *Fulham*, where the Soil is sandy, and the Exposure warm, there was a *Vine* planted against an Oven which was constantly kept hot for baking of Earthen Pots, that began to bud about *January*, and would, as I am

inform'd,

nform'd
Glas Fr
ther; an
ney wh
as to w
early, a
Vines w
ed.

Supp
to Shoo
ceive o
the exp
to the S
or maki
Leaves
ing, tha
side Ski
rishmen
I am su
Vegetab
the lar
Heat o
Fruits
remain
then b

I sha
of tho
ledge
chiefly
ripe F
It i
their
much
for th
away
among
prun'd
I hav
der'd,
was t

inform'd, have ripe Grapes in *June* by the help of a Glass Frame which was used to cover it in severe Weather; and so to plant a *Vine* against the back of a Chimney where a Wood or Turf Fire is constantly kept, so as to warm the Bricks, it will by that means sprout early, and have its Fruit sooner perfected than other *Vines* which have not that Help, as I have experienced.

Supposing then, that a *Vine* by this Means is brought to Shoot or Blossom earlier than usual, let us not deceive our selves with the too common Opinion, that the exposing the Blossom or young Fruit immediately to the Sun, will be a means of hastening its Maturity, or making it large, and as some do, to pull away the Leaves from about it; for that rather retards the ripening, than forwards it, by contracting so much the outside Skin of the Fruit, that it cannot receive the Nourishment it ought, and would otherwise admit of; and I am sure whoever knows any thing of the Growth of *Vegetables*, will allow, that Shade always contributes to the large Growth of Plants and Fruits, and that the Heat of the Sun is chiefly requisite for the ripening of Fruits; therefore let the young growing Fruit always remain shelter'd with its Leaves till it be full grown, and then begin to lay it open to the Sun for ripening.

I shall next consider the *Pruning* of *Vines*, especially of those growing against Walls; for it is a right knowledge of the Seasons and Manner of Pruning, which chiefly contributes to give us a plentiful Store of good ripe Fruit.

It is commonly practised by the Gardeners, to prune their *Vines* in *December*, which Season they hold to be much better than the Months of *January* and *February*; for the *Vines* prun'd in those Months, are apt to bleed away too much of their Strength; and it is as common among them to leave four Buds or Eyes upon every prun'd Branch, whether they are strong or weak Shoots: I have, I must confess, seen *Vines* that have been so order'd, produce good Fruit; but I am assur'd, whoever was to see the *Vines* which are now in Mr. Fairchild's

Garden at *Hoxton*, would go another way to Work. It is his Method to prune his *Vines* so soon as the Fruit is gather'd, and according to the Strength or Thickness of the Branch he leaves growing, he allows a due Length, a very strong one, about a Yard long, and those of less Vigour are prun'd shorter in Proportion. By this Method of Pruning, I observe he never fails of large Quantities of Grapes, ripening very well, and much earlier than any of the same kind prun'd after the usual manner.

The *May* after this Pruning, our *Vines* must be again look'd over, and then disburden'd of the small weak Shoots, rather by breaking them off, than cutting; and such Shoots as have then Fruit appearing upon them, must be top'd so as to leave a sufficient number of Buds above the Fruit upon each Branch, in proportion to its Strength or Thickness, observing always not to prune nearer to the Fruit than three or four Buds.

In *June* the *Vines* must be examin'd for the third Time; and the barren Branches, which will then be shot to a great Length, should be prun'd to such Lengths as answer to their Vigour, or else taken quite away, if they are not wanted to furnish some Vacancy on the Wall.

About the Beginning of *August* the Grapes of the forward Kinds will be full grown, and then we may again give a fourth Pruning, in order to expose the Fruit to the Sun for ripening; but yet let it not be left too naked of Leaves, lest it be injur'd from the cold Dews which begin to fall the latter End of the Month.

In the Summer Prunings of *Vines*, due regard ought to be had to the Number of Branches, which the Wall will require to be laid in the Winter to supply the place of old Wood, which should then be taken away; for it is a certain Rule, that no Branches of the *Vine* bear Fruit but such as are the Produce of the last Year; and those, if they are discreetly managed, seldom or never fail to furnish Fruit in abundance.

Thus I have set down what I know concerning the Management of *Vines* against Walls, and shall now proceed

ceed to
ordering
which I
England,
many.

If a
tain it v
an Acre
posed P
come o
strictly
directed
Charge
more th
ring th
gan to
Year a
Shilling
upon t
upon r
will pr
appear

In
Grape
ripen
witne
Swall
Johns
that n

2d
with
the F
that
Rben
what
appro
reaso
the
good

ceed to offer some few Hints concerning the Way of ordering them in *Vineyards* for the making of Wine, which I am satisfied may turn to as good Account in *England*, as they are known to do in many Parts of *Germany*.

If a *Vine* will prosper upon a Chalk, as we are certain it will, how trifling would be the Expence to plant an Acre of such Ground with *Vines* in some well-exposed Place on the Declivity of a Hill? The yearly Income of such Land can hardly be a Shilling, if it be strictly Chalk; and the *Vines* may be rais'd, as I have directed, with very little Trouble; and then for the Charge of Planting, a Week's Work for a Man would more than do it, seeing there is no Necessity of Manuring the Ground: The whole Expence before they began to bear Fruit, which would be the third or fourth Year after Planting, could hardly amount to twenty Shillings; so that I see no room for any Objection upon that account: The chief thing will be to shew, upon reasonable Grounds, that Plantations of this kind will produce ripe Fruit, and that, I think, may be made appear very plainly.

In the first Place plant only the forward Kinds of Grapes, which have often enough been experienced to ripen in open Borders, without the Help of a Wall; witness the *Vines* at a French Gardener's at the Back of *Swallow-Street*, *London*; those at the Honourable *Johnson's*, Esq; at *Twittenham*; the *Vineyard* near *Bath*; that near *Greenwich*, and almost in every Nursery.

2dly, The Chalk-hill, which I propose to be planted with *Vines*, will certainly reflect as much Heat upon the Fruit as any Wall whatever; and every one knows that the Cold in those Parts of *Germany* where the *Rhenish* Wines are made, is much more powerful than what we feel in *England*, so that since we need not be apprehensive of too much Cold in the Winter, and may reasonably expect as much, if not more, Warmth in the Summer, our *Vineyards* may certainly afford us as good Wine as what we receive from the *Rhine*, and some

places in *France*, and consequently turn the Owner to Account.

But that we may answer every Objection that may be made against planting of *Vineyards* in *England*, give me leave to recite what I have heard relating to the making of Liquors with unripe and sour Fruits. In *Devonshire* a Gentleman made a Vessel of *Verjuice* of Crab or *Wilding-Apples*, which being placed in his Cellar among other Liquors, was not used till about three or four Years afterwards, and was then found to be so palatable and exceeding pleasant, that he now prefers the Liquor made of such *Wilding* sour Fruit (after it has had time to digest) rather than any *Cyder* of that Country: So I have known *Verjuice* made of half-ripe Grapes, that after two or three Years keeping in a Vessel has become delicate Wine; and the *Rhenish* Wines, when they are newly made, are so sour, that they are not fit to drink, but after several Years standing afford us that incomparable Liquor, which is call'd *Old Hoc*; and on the contrary, sweeter Liquors are apt to turn sour by keeping, which is one Argument to prove that a continual Motion and Alteration of State of every created Atom, is requisite to support the Frame of Nature; and, as I conceive, was it possible that any one the least Particle of Matter could be destroy'd or lie still, all Life and Being must cease; such Dependency has the greatest Bodies upon the smallest Beings, or the most inveterate Opposites upon one another. The skilful Chymist knows how to separate the differing Parts subsisting in Liquors from one another; the volatile Spirits from the more watery Parts, and those from the more oily; so that we find every Liquor contains a Chain of certain Qualities; and Liquors are only differing, in that one has perhaps the Acid more prevailing, the other the Alkali; or either of those Powers more or less predominant at certain Seasons. The Sweet, when it prevails in any Liquor, is not without the Sour subsisting in it, altho' it has not Power to appear 'till its opposite begins to decline, and so the Sour is not without the Rudiment of Sweet, altho' it cannot be discern'd 'till the

the tim
advanci
proceed
and tho
in Eng
higher
yards in
Vines,
of Hill
lower;
Wine
Valleys
are alw
To
is to fl
Plants
Yard
their
It is us
the S
than
quire
clear
planti
to th
strong
secon
perflu
June,
Vine
short
suppo
close
too m
the
the m
Win
Met
to b
Stre

the time of ripeness approacheth. But I shall forbear advancing any farther at this time in so vast a Field, and proceed to the Business in hand; That our Chalk Hills, and those that are accounted the most barren Mountains in *England* are very proper to plant *Vines* upon, and the higher the better; for 'tis observable that several *Vineyards* in one Country, planted with the same sort of *Vines*, produce very different Wines; those on the Tops of Hills much stronger and better than those which lie lower; insomuch that one Barrel of the Mountain Wine will sell for much more than that growing in the Valleys; and so far as I can learn, the strongest Wines are always the Produce of the highest Mountains.

To plant a *Vineyard*, let the Place where each *Vine* is to stand, be open'd and prepar'd before any of the Plants are taken out of the Nursery; let them stand a Yard asunder in Lines, and the most proper Season for their planting is in the first open Weather in *February*. It is usual to prune these *Vines* according to their Strength the *September* before transplanting, leaving not more than four Buds on the strongest, and then they will require no other Care the first Summer but to keep them clear from Weeds; about the End of *September* after planting, shorten the Shoots of that Summer according to their Strength, and the Summer following the strongest of them will begin to shew a little Fruit; this second Year the breaking of the small Shoots and superfluous Branches should be carefully done in *May* and *June*, and two or three Shoots only maintain'd on each *Vine*, according to its Strength, and those not to be shorten'd 'till the *September* following; these should be supported by Stakes or Poles, so that they may not run close to the Ground, but about a Foot above it, lest too much Wet spoil and rot the Fruit; for the nearer the Ground the Grapes grow, if they do not touch it, the riper and sweeter they will be, and the stronger the Wine. In a Word, continue from time to time this Method, to preserve young strong Shoots every Year to bear the following Summer, in Proportion to the Strength of every *Vine*, cutting away all the old ones, which

which (were they to remain) would only rob the Plants of their Strength.

But if notwithstanding all the Care of pruning and weeding the *Vineyard*, the *Vines* are not inclin'd to produce large Bunches of Fruit, lay Ox's Blood or Carrion to their Roots about *November*; or, as it is very common in all the *Vineyards* abroad, manure them with humane Dung that has lain some time to meliorate and has lost its Odour. This Way of enriching Ground has very evidently the best Effect upon Fruit Trees of any other Manure whatever, but *Vines* chiefly, which will not bear any other.

With this Management, I doubt not that our *Vineyard* will produce good Store of Grapes in 5 or 6 Years after planting; and if the Owner should be then disposed to try what Wine they will produce, let him gather the Fruit when they are full ripe in dry Weather, if possible; then put them in the Fatt, and have them trodden by Men to press out the Juice without breaking the Stones; or where the Quantity of Grapes is not large, to press them with the Hands will do as well, and seems more cleanly: The Liquor thus press'd, should stand in the Fatt about 15 Days with the Husks and Stalks in it to ferment, if the Grapes were dry when they were gathered, otherwise not much above half that time before the Wine be drawn off, lest it turn sour, as it will be apt to do if the Grapes were gather'd wet. Some who are very curious in their Wine, pick off the damaged Grapes from the Stalks, before they make the Wine, which is so rich in its Flavour, that to compare it with the Wine made the common Way from the same *Vineyard*, it does not appear to be of the same Growth.

It is observable, that according to the Management of the *Vines*, the Wine is stronger or weaker: Those *Vines* which have their Liberty to run up high Trees, and are never pruned, afford the smallest Wines; others which are kept pruned, and have their Branches tied to Stakes about four foot high, make stronger Wine than the former; but the strongest of all, is made of those Grapes

Grapes
and are
three or
say, ex

T
best se
March,
any of
most b
if it c
like th
inform
bish,
monly
Walls
other
for in
grow
abund
I hav
by pr
are ob

I h
grow
is so
there
that
more
der'd
to pl
let t
terru
may
nage

Grapes which grow near the Ground, as I have directed, and are sometimes after gathering hung up to dry for three or four Days before they are press'd, which, they say, exhales the watery Parts.

SECT. II.

Of the FIG.

THE *Fig* delights in the same Soil with the *Vine*, and may be propagated either from Suckers or Layers, and also from Seeds. The Suckers are best separated from the old Roots the Beginning of *March*, and should then be transplanted without cutting any of their tops; for this above all other Trees suffers most by Amputation, and indeed should never be pruned if it could be avoided: The Layers should be order'd like those of the *Vine*, and the Seeds, as I have been inform'd, will readily come up if they are sown in Rubbish, or such like Soil, about *March*. It is most commonly practis'd in *England* to plant *Fig-Trees* against Walls, because it has been thought the Fruit would not otherwise ripen in our Climate; but that is a Mistake; for in several Gardens about *London* I have seen them grow in Standards, and prosper and bear Fruit in more abundance, and much better, in my Opinion, than any I have yet seen against Walls; for as they are endanger'd by pruning, so they like as little the Confinement they are obliged to against Walls.

I have been told of a *Fig-tree* near *Windfor* (that grows wild without Culture in an old Gravel-pit) which is so extreamly large, that many Bushels of *Figs* are gathered yearly from it; and I know of some old *Fig-trees* that have been neglected for many Years, which bear more Fruit than any that I have ever seen dress'd and order'd in Gardens; and it is the common Practice abroad to plant them in certain Places of their *Vineyards*, and let them grow after their own Manner without any Interruption, so that with very little Difficulty this Tree may be cultivated. The only Art requir'd in its Management, is to preserve the second *Figs* during the Winter,

Winter, that the severe Weather do not make them fall from the Tree, but that they may be maintain'd in Health to ripen early in the Summer. I remember to have seen at the late Bishop of London's Gardens at Fulham, ripe Figs in May, which were brought to that forward Perfection by keeping them in Pots, and sheltering them all the Winter in a Green-House.

Tho' with us we have not many Varieties of this kind of Fruit, yet are there as many Sorts of Figs as of any other Fruit, which in Spain and Italy are held in great Esteem. The *White Figs* chiefly are valued by the Curious for their delicate Flavour, and early Ripening.

SECT. III.

Of the L'AZZAROLE.

THE L'Azzarole or Neapolitan Medlar is a kind of Service, producing very pleasant Fruit, as I have heard from some curious Gentlemen who have eaten of it in Italy, where it grows frequently: Of late Years it has been brought into England, and cultivated in several Gardens, where I am inform'd it has produced Fruit; it boldly resists the Severity of our Winters, and is well inclin'd to grow with us either in Standards or against Walls. I have propagated it three several Ways, by Budding it upon the *Hawthorn* in July, by Grafting in the Cleft in March, and by Inarching in May; so that the Admirers of this Fruit may be easily stock'd with it, if they are provided with a Nursery of *Quickset*. It loves a holding fat Soil.

SECT. IV.

Of the MULBERRY.

WE have two Sorts of Mulberry, the *Black* and the *White*; the first is the most common of England, a slow grower, and chiefly famous for its Fruit; and the *White Mulberry*, which grows extreamly quick, has indeed a small insipid Fruit, but is no less deserving than the other on account of its Leaves, which are the proper Food of the *Silkworm*.

The

The
when it
Carriage
produc
and it is
ther be
as a R
the Co
Crow I
I do
Tree w
commo
on) an
advise
Stocks
strait,
I am w
them
Seed,
Th
sown
Earth
Weel
first S
Spring
By
noug
Silk-
Field
time
Italy
ner c
who
Yea
two
as I
in c
do
but
que

The *Black Mulberry* is an Autumn Fruit, so tender when it is ripe, that it will not bear the most gentle Carriage without bruising; it is a Catkin-bearing Tree, producing Male and Female Blossoms at the same time, and it is noted by some, that it never buds till the Weather be settled warm; wherefore it has been laid down as a Rule, That *Orange-Trees* may be brought out of the Conservatory, as soon as its Leaves are as large as a Crow Foot.

I do not remember ever to have seen this kind of Tree with a strait Stem of any good height, or will the common way of raising it, ever produce (in my Opinion) any better than I have seen; 'tis therefore I would advise that it be inoculated or grafted by approach upon Stocks of the *White Mulberry*, which naturally grows strait, and will make a handsome Tree very quickly. I am well assur'd this would do much better than raising them by Layers, which is the common way, or from Seed, as some have practis'd.

The *White Mulberry* may be increas'd either by Seeds sown in *March*, or laying the youngest Shoots into the Earth at that time. The seeds will sprout about three Weeks after sowing, and be near six Inches high the first Summer, and the Layers will be fit to take off the Spring after they are laid into the Earth.

By either of these ways we may soon raise store enough of young Plants to supply a large quantity of *Silk-Worms*, for which end the *Chineses* sow large Fields of this Sort of *Mulberry* to mow them down from time to time as they have occasion; and the People of *Italy* plant Trees in the Roads, and every vacant corner of their Ground. I have heard of a Man near *Utrecht*, who has lately began the Trade of Silk, and the last Year, as I am inform'd from good Hands, made ten or twelve Bales of *Silk* from his own *Worms*: And, so far as I can understand, were *Silk-Worms* more regarded in our Climate, they would do as well with us as they do in *Italy*, where they are subject to so many Hazards, but chiefly to be spoil'd by the violent Thunders frequent in those Parts: No Man there is certain of a good
Silk-

Silk-Harvest, till the Worms have actually spun their Silk; for if Thunders happen to come just when the Worms are going to spin, they will immediately drop, and infallibly perish. It would be well to try whether the firing of Guns near such Trees as are infested with Caterpillars, will not destroy those Insects.

CHAP. II.

Of Kernel-Fruit, such as the APPLE, PEAR, MEDLAR, QUINCE.

SECT. I.

Of the APPLE-TREE.

THERE is no kind of Fruit better known in England than the *Apple*, or more generally cultivated. It is of that Use, that I hold it almost impossible for the *English* to live without it, whether it be employ'd for that excellent Drink we call *Cyder*, or for the many Dainties which are made of it in the Kitchen: In short, were all other Fruits wanting to us, *Apples* would make us amends.

It may therefore be expected that I should be the more particular concerning the Culture of this Tree, but considering how many have written of its Management, and how generally it is propagated with good Success, I shall not enlarge upon it so much as otherwise I should have done.

To set down the several various Names of *Apples*, would be a Work almost impossible, seeing how many various kinds are yearly produced from the Kernels in almost every County in *England*; and where they happen to prove good, either for making *Cyder* or Table-use, have Names given them according to the mind of the Person that rais'd them: However, as every Kind of *Apple* will not do well in *Espalier*, I cannot well a-

void

void mentioning those few sorts which I have approv'd to be the most proper for Hedges, and the rather because their Names are generally known to every Nursery-Man about London. For that Use then, the *Codlin*, the *Non-pareil*, *Golden-Pippin*, *Kerton-Pippin*, and *Holland-Pippin*, seem to be the best: I have found these Kinds to bear plentifully, and produce Fruit upon their lowest Branches; and I am persuaded whoever delights in Gardens will not be without *Espaliers* of them, as well for the sake of the great Quantity of Fruit they will produce, as for the Ornament they afford to a Garden, and the good Shelter they yield to all the Under-Race of Kitchen-Garden Plants which are encompass'd with them.

I have found this Good by enclosing the Quarters of a Kitchen-Garden with *Espaliers* of Fruit, that as they lose their Leaves in the Winter, they then obstruct none of the Sun's Rays from passing directly to the Herbs planted within them; and in the Summer, when they are cover'd with Leaves, they afford that Shade which is so requisite for the good Growth of many Plants; and besides these Conveniencies, being tied up to Poles, and kept in good Order, the very Borders they are planted in are as capable of receiving into them Herbs or Flowers, as if they were plain and open, and not any Trees planted on them.

The *Codlin*, which is the first of the *Apples* I have named for this Use, is propagated from Suckers taken from about the Roots either in *November* or *March*, and the other Sorts are increas'd by grafting upon *Crab-Stocks* in *March*: If they are design'd for tall Hedges, or if for Dwarfs, or for *Espaliers* of small Heights, then upon *Paradise-Stocks*; the Soil which these and all other *Apples* seem to delight in, is a medium Earth between Sand and Clay, which they prosper in if it be fresh, rather than with a mixture of Dung among it.

I find, from Experience, that all *Kernel-Fruit* suffer greatly by Pruning, and it is by the unskilful Management of the Knife they so frequently are apt to canker, and sometimes quite perish; for my own part, that I
may

may somewhat curb the use of the Knife, I choose to break off the Buds, which would produce luxuriant Branches, when they first appear, rather than leave them to be cut from the Trees when they are full grown, which is commonly when the Sap is at rest. In *May* it is easy to discern what Buds are shooting for our Use, *i. e.* which will become Branches either to fill the vacancies of our *Espaliers*, or make Fruit-Branches; and it is at that time I disbud the Tree of the others which I esteem useless, for then the Sap will heal the Wounds.

An ingenious Person who knows that the Shoots of *Apples*, *Pears*, and such like *Kernel-Fruit*, will not bear till they are two Years old, will always contrive to lay in store of Branches every Year into his *Espaliers* to succeed one another in Fruit-bearing; for the same Branches will produce Fruit but once, and when that is over (in *Espaliers*) they should be taken away in proper Season to make room for the others which are coming forward. Such Pruning indeed cannot be avoided on *Espaliers*, no more than taking away the Autumn Shoots; but the disbudding them in *May* will prevent a great deal more, which otherwise there would be occasion for; so that upon an *Espalier* well order'd, we ought to see Wood laid in of three Summers, the one with Fruit, others to knot for Blossoms, (which work Nature always contrives to do in the Bud, the Year before they blossom) and the third sort new Shoots to follow in their turn; for Example, In *August* of this present Year, 1718, there ought to be upon our *Espaliers* about one third of the Branches with Fruit, one third of the Branches which have shot this Year, and the like proportion of Branches knotted to blossom the next Spring. About *Midsummer* is the best time to tie the Shoots of that Summer to the *Espaliers*, and disburden the Tree (especially if it be weak) of its superfluous Shoots; let the Branches be tied about four Inches apart at least, for nearer than that Distance would be too close; Hedges thus dress'd would not be subject to overbear themselves, but give every Year a moderate proportion of Fruit large and good.

It

It is
Apples
that fl
Wood
Wint
of old
Bet
find t
well f
and th
they
this R
first p
'till M
Th
done a
foot h
Aspen
For
those
for th
dance
them
of Fru
than
Enter
ral So
be a
fail to
from
of Bla
of the
ripeni
Par
tings
freely
they
are to
don;
PA

It is observable, that some of the Summer Kinds of *Apples* and *Pears* will produce Fruit upon the Branches that shot the Summer before, and upon such Trees the Wood of two several Years may only be left; but the Winter-fruits which ripen late, are always the Produce of older Wood.

Between Leaf and Leaf, the Gardeners commonly find their time to prune off all the *Autumn* Shoots, as well from their Standard-Trees, as from their *Espaliers*; and then disburden them from such Wood likewise as they judge unprofitable; but the Skilful have always this Rule before them, that the most weak Trees are first prun'd, and those which are very luxuriant are left till *March*.

The planting of *Apples* or *Pears* for *Espaliers* is best done at the fall of the Leaf, leaving about ten or twelve foot between Tree and Tree, and the Rails made of *Aspen Poles* may be put up the following Summer.

For *Dwarf-Apples*, I believe every one will allow that those grafted upon *Paradise-Stocks* are the best, I mean for their keeping in a small Compass, and bearing abundance of Fruit with very little pruning: I have known them frequently cultivated in Pots, sometimes so full of Fruit, that the *Apples* themselves have weigh'd more than the Tree, and the Pot they grew in. At great Entertainments, how delightful would it be to set several Sorts of *Apples*, growing, upon the Table! It would be a Kind of movable Orchard, which could seldom fail to bear good Fruit, as the Trees might be shifted from place to place, either to put them out of the way of Blasts, or place them in the Shade for Improvement of the Growth of the Fruit, and in the Sun for the due ripening them.

Paradise-Stocks are raised with us by planting the Cuttings of them in *Autumn*; they strike Root and grow freely, so as to be fit to graft on in two or three Years; they are brought originally from *France*, but now they are to be met with in almost every Nursery about *London*; and for *Standard* and *Hedge-Apples*, *Crab-Stocks* taken

ken out of the Woods, or *Seeding-Plants* of about three Years old, are the best.

There are two ways of planting an Orchard; the one to make it entirely for Fruit, the other to plant the Trees at such Distances as to admit of an Under-crop. I must confess, was I to make an Orchard to please myself; I would first divide the Ground into Parcels, allowing handsome Walks between them, which should some of them be fenced on the Sides with *Espaliers* of Fruit, others left open with Borders only on their Sides, adorn'd with Rows of *Standard-Apples*, such as *Golden-Pippins*, *Golden-Renets*, *Russet-Pippins*, *Kitchen-Renets*, *Pairmains*, *Green-Russets*, and such like serviceable Fruits that will remain good for several Months.

In these several Quarters plant your Trees at about sixteen Foot distance, if you design a close Orchard, or near thirty Foot asunder if the Ground is design'd for *Beans*, *Peas*, or such like Under-crops. In planting this Ground for either Purpose, supposing it three Acres, let two thirds at least bear *Apples*, and the Remainder be allotted for *Pears*, *Plums*, *Cherries*, and a *Mulberry-Tree* or two: The Ground thus planted may be fenced about with Hedges of *Philbuds* and *Berberries*, to make it still the more compleat and delightful.

SECT. II.

Of the PEAR.

THE *Pear* in my Opinion is a Fruit no less pleasant than the *Apple*, altho' it is not of that general Use, however we are beholding to it for no small Entertainment in the Winter when other Fruits are scarce; whether we eat them raw, or baked, they have their Excellencies: The Varieties of *Pears* are almost without Number, if we were to join the several *French* Sorts to the Catalogue of those rais'd in *England*; but as I suppose every one would rather propagate a few good Sorts that bear well, and follow one another in right Season, than croud his Garden with useless and unprofitable Trees; I may therefore be excus'd inserting a tedious List of their Names, and give the desir'd Satisfaction

tisfaction to my Reader, if I mention only those Kinds that may bring him Profit and Pleasure; and those I shall set down as near as I can remember in the Order they ripen: The first ripe is the little *Muscat*, and then I would recommend the *Katerine-Pear*, which is indeed a common Fruit, but is nevertheless of an agreeable Flavour; The *Windsor-Pear* likewise is in my Esteem, tho' it is an *English* Fruit, well worth our propagating: About the same time are ripe the *Quisse-Madam*, *Summer Bon-Chretien*, and *Summer-Bergamot*, and indifferently good, but especially the latter; then the *Orange-Bergamot*, and the first *Bureé-du-Roy*, exceeding good; and after these the *Lemon-Pear*, *Bargamot*, *Grey-Bury*, *Kirte-Longue*, *Green Sugar-Pear*, *Messire-Jean*, and *Crysan*; then ripens the *Winter Thorn-Pears*, *Virgolue*, *Leschafseries*, and I think also the *Sweet-William Pears*; some of which last continue part of *December*, in which Month the *St. Germain* and *Martins* Pears are also beginning to ripen, and will hold good all the *January* following, 'till the *Winter Bon-Chretians* supply their Place; all these are *Eating-Pears*; and for the baking Kinds that are the best I know of, they are the *Wardens*, *Black-Pear* of *Worcester*, and *Spanish Bon-Chretien*; these, if they have time enough to stand in the Oven, will bake extreamly tender, and very red; but particularly will be of a most beautiful Colour if they are baked in Tin or Pewter-Vessels close cover'd, as has been often experienced; but indeed 'tis no wonder if by this Means they are better colour'd than those that are baked in Earthen-Ware, if we consider that 'tis a Solution of Tin Oar that makes the so much admir'd *Beau-dye*; and I doubt not but if such as dye Scarlets made use of Tin or Pewter-Vessels, rather than Copper, it might save them somewhat in the Expence of *Cochineel*, or such other chargeable Ingredients. *Pears* are either grafted in *March*, or inoculated towards the latter End of *June*; and two sorts of Stocks are made use of for those Purposes, Wildings or Kernel-Stocks; and oftentimes such as are taken from about the Roots of old Trees, and planted in Nurseries, are good for *Standard-*

Pears, because they put the Graft or Bud forward, and tend to make large Trees ; but *Quince-Stocks* are much better for such *Pears* as are design'd for Dwarfs, low Walls, or Espaliers, because they confine the Growth of the Graft or Bud, and produce Fruit quickly, and near the Ground.

The Soil which the *Pear* chiefly delights in is a wet Earth inclining to Clay ; nay, I have seen this Kind of Tree prosper extreamly in the strongest sort of blue Clay, which is accounted the worst of Soils ; so that this Sort, no more than the Apple-Tree, delights in what we call rich Earth. If indeed one of this sort of Trees seems to decay, encourage it at the Root with Carrion, or the Blood of some Animal, for that has a wonderful Effect upon all Kind of Fruit-Trees ; and I believe would have the like upon every sort of Vegetable, as we have experienced Shavings of Horn, Scraps of Leather, Wool, or the Entrails of Fowl, or such like Parts of Animals will have upon those Plants, whose Roots they are laid to. It seems therefore as if the Animal and Vegetable were made for the Support and Food of each other ; the Plants to nourish the living Animals, and the dead Animals to feed the Vegetables.

In the Pruning of *Pear-Trees*, the same Method ought to be observ'd as for *Apples* ; they delight not in a Knife, and especially those grafted upon *Quince-Stocks*. Upon the cutting off any large Branch (if it happen to be necessary) cover the Wound with a Mixture of Tar, Rozin and Pitch, immediately after the Amputation, which will prevent ill Distempers, which the Wound would otherways be apt to bring upon the Tree.

I am no Admirer of *Dwarf Pear-Trees* in a Garden, because their Figure is commonly too much study'd and confin'd to afford us a good Quantity of Fruit ; for it is almost impossible to have both together in Perfection ; and besides they take up too much room. I remember a fine Seat near *London*, where about four Years ago the Gardens abounded in *Dwarf Pear-Trees*, which altho' they were prun'd with tolerable good Skill, never produced

duced a
laid into
since in
to the
Dispositi

Let f
secured
be good
ing upo
of Kno

The
fix Foo
Fruit-b
ought
such as
most p
to bear
or neve
plant t
Hedge
twelve

The
some o
chard
of App
Years
plentif
state,
attem
which
wembe
ceive
enoug
transp
to be
the E
his T
the E
to th
they

duced any Quantity of Fruit, 'till at length they were laid into Espaliers, and have born Fruit every Summer since in great Plenty; and I believe there was not gain'd to the Garden less than half an Acre of Ground, by that Disposition of them.

Let such *Pears* as are planted against Walls be well secured from the *East*; for altho' the Fruit, in its Kind, be good and hardy, the Eastern Blasts of the Spring coming upon it, thickens the Rind, and fills the Fruit full of Knots as hard as Stone.

The Espaliers for *Apples* and *Pears* should be about six Foot high, that there may be room enough for the Fruit-bearing Branches to be laid into them. And we ought likewise to observe, that the *Summer-Pears*, i.e. such as have their Fruits ripen upon the Trees, are the most proper for Espaliers, because they are most subject to bear near the Root, which the *Winter Fruits* seldom or never do; so that it would be to little purpose to plant the *Bon-Chretien*, and such like lasting Fruits, in Hedges, or against Walls, that are not at least ten or twelve Foot high.

There is a Method, which has been experienced by some of my Friends, to transplant large Trees of Orchard Fruit. One of my Acquaintance had an Orchard of *Apple* and *Pear-Trees*, that had stood about twenty Years; the Trees were in good Health, and bore Fruit plentifully; he had occasion to remove to another Estate, about a Mile from this Orchard, and resolv'd to attempt the Removal of his Fruit-Trees with him, for which End he open'd Trenches about the Roots in *November*, and at the same time made Preparation to receive them into his new Garden, by making Holes big enough to admit of the Clods of Earth he design'd to transport with each Tree. Soon after the Frosts began to be violent enough for his Purpose, and so harden'd the Earth about the Roots, that with Leavers he rais'd his Trees out of the Ground, without breaking any of the Earth from them, and convey'd 'em upon Sledges to their several Stations in his new Garden, where they remain'd in the State they were brought, without

closing any fresh Mold to their Roots till it began to thaw, and then he finish'd his Work by filling up the Trenches, and treading down the new Earth very close.

About a Month after they were thus fix'd, he discreetly pruned off about one third of their Boughs, as near as he could guess, to answer the quantity of Roots they had lost, and the following Summer had a good parcel of Fruit upon them. No less useful than this Method, would be the Removal of young Trees at *Midsummer*, which I believe would succeed very well, tho' I have not try'd it; for the last Summer Mr. *Furber*, a very ingenious Nursery-Man at *Kensington*, removed at that Season several sorts of *Ever-greens*, which are now growing, and in much better Health than some others that he transplanted in the last *Autumn*. As I conceive the Sap of every Tree to be at rest about *Midsummer*, the Transplantation may then be perform'd with as much reason, as the Removal of them at the common Seasons used for that Work; for they have then more time to strengthen themselves, and form their Roots before *Winter*, than those planted at *Autumn*, and will undoubtedly be better prepar'd to make strong Shoots than any Trees that are planted in the *Spring*; but whether those Trees that shed their Leaves will fare as well by this Method as *Ever-greens*, may be try'd.

I shall now conclude this Section with acquainting my Reader, that such Fruit as does not ripen upon the Trees, should not be gather'd till *Michaelmas*, and then only in dry Weather, if possible, without bruising, and laid singly upon Shelves cover'd with dry Moss, if it can be got, or for want of it, upon Wheat-straw, giving it Air by opening the Windows of the *Fruiter*y (or Room it is laid in) till the Frosts begin. Some choice *Pears*, which ripen late in the Year, may be yet preserved by hanging them up by the Stalks to the Ceiling of the Room; and I have known some curious Persons wrap them in Paper, and hang them up till they were fit to eat.

SECT.

Of
T
give th
Soil, an
it upon
Standar
The
Sucker
which
bear :
Februa
Root
Soil,
ceeds

Obser



were
for t
part
part
Tre
ny
has
Fru
pru
Tr

S E C T. III.

Of the MEDLAR, and QUINCE-TREE.

THE *Medlar*, contrary to all other Fruits is not fit to eat till it is rotten or decay'd; and as it is then agreeable to some Palates, I shall therefore give the Culture of it. It delights in loamy, natural Soil, and requires little Sun. It is propagated by grafting it upon the *Hawthorn* in *March*, and is only fit for Standards, in the most remote Parts of the Garden.

The *Quince* is raised either from Layers, Cuttings, or Suckers taken from the Root; it is a natural Fruit which does not require grafting, and comes early to bear: The young Twigs may be laid into the Earth in *February*, or the Cuttings planted in *November* strike Root without Difficulty. This Plant loves a moist Soil, and Shade, and the Fruit, in my Opinion, exceeds all others for baking.

C H A P. III.

Observations and Experiments relating to the Propagating and Culture of Stone-Fruit-Trees.

THE Fruits which may be comprehended under the Title of *Stone-Fruits*, are *Peaches*, *Nectarines*, *Abricots*, *Plums*, *Cherries* and *Almonds*; all which (the *Cherries* excepted) are so nearly ally'd as to make, as it were, one Family. What Directions I shall lay down for their Management will rather be in general than in particular, seeing how impossible it is to know every particular Soil, or the Disposition of every different Tree, which if they were known would require as many various Ways of ordering. *Monf. de la Quintiney* has indeed given us a very elaborate Piece relating to *Fruit-Trees*, endeavouring to ascertain the Method of pruning them, but how seldom do we meet with any Trees just in the same State of those he mentions? And

if by chance we do happen to find such, how difficult is it to comprehend rightly his Meaning? I cannot therefore avoid giving all due Commendations to the Ingenious Mr. *Laurence*, who is the first, I know of, that has reduced those Difficulties in the ordering of Fruit-Trees to plain Reason, and has given us such useful Experiments, whose Consequences may best lead us to the right way of Practice in this Point. To proceed then upon the foot of Reason and Experience, as far as my Capacity will permit, I shall begin with some Observations upon the Nursery, whose Soil should be inclining to Loam, a medium Soil between Sand and Clay, and not any ways enrich'd with Dung; for if the Nursery be richer than the Garden, the Trees never thrive when they are transplanted; therefore always contrive to plant them from bad into good Ground. About *September* make your Plantation of Suckers taken from the Roots of the *Muscle-Plum*, the *White Pear-Plum*, or the *Black Damask*, which are good to inoculate *Peaches* upon, but must not be budded till *July* in the second Year after they have been planted in the Nursery. I have observ'd that *Peaches* prosper most that are budded upon *Almond-Trees* raised from the Stones. *Almonds* are to be put in the Ground as soon as they are ripe, and in one Year's Growth may best be inoculated, for they are too apt to *Gum* when they are older.

Nectarines and *Abricots* may likewise be budded upon any one of the *Plum-Stocks* I have mention'd taken from thence, and will prosper much better than if they were inoculated upon the best sorts of *Plumbs*.

The Stones of *Black-Cherries* should be set or sown in *Autumn*, to raise Stocks to graff all other *Cherries* upon; they should be planted out the second Year after they are come up in Lines, about two foot apart; and the like distance should be preserv'd between all other Stocks that are design'd to graff on.

Cherries prosper best if they are graffed, which is contrary to *Peaches* and *Nectarines*, that will rarely be made to thrive but by Inoculation; all these are subject to

Gum,

Gum, v
Trees a
whole
which
especia
summer
few S
slightl
to be
which
Fruit-
or cut
as the
ches,
Years
certai
upon
guish
suppl
Tar,
Wor
prev
I
naili
shrin
Sho
Bin
and
let
wit
Par
mar
Inc
ner
our
bei
not
or
fle
to

Gum, which *Kernel-Fruit-Trees* are not, but the *Peach-Trees* and *Abricots* suffer the most by it, and often lose whole Arms by a Canker that always attends the *Gum*, which comes commonly by unskilful pruning, but more especially by cutting into the old Wood at the *Midsummer* Pruning; therefore at that Season take off as few Shoots as possible near the old Wood, but nail up slightly as many as can conveniently be laid to the Wall, to be more regularly disposed the *February* following, which is the best Season for the capital Pruning of *Stone-Fruit-Trees*; then may every bearing Shoot be topp'd, or cut, to leave about six or eight Inches, according as they are strong or weak, and all cross-growing Branches, dead Wood, and the Shoots of two or three Years old, must then be entirely cut out; for it is a certain Rule, That all *Stone-Fruit-Trees* only bear Fruit upon the Shoots of one Year old, which may be distinguish'd from barren Shoots, by being smaller and better supply'd with Buds. I would advise that a Mixture of *Tar*, *Pitch*, and *Bees-Wax*, be laid upon any capital Wound, or else that it be burnt with a hot Iron, to prevent *Gum* issuing from it.

I account List of Cloth to be much better for the nailing of these Trees than Leather, which is apt to shrink by change of Weather, and bind too much the Shoots which are encompass'd by it: It is by such Bindings that oftentimes good Branches are wounded, and by that Means perish; and therefore it is good to let them have room enough allow'd for them to swell, without any Pressure upon them. In *Holland*, and some Parts of *Flanders*, they have Frames of Wood, in the manner of *Espaliers*, set against their Walls, about four Inches distant from them, and the Reasons the Gardeners there give for so doing is not (I think) unworthy our regard. In the first Place they say, that their Trees being four Inches distant from the Wall, the Fruit is not apt to be destroy'd or spoil'd by Vermin, nor bruised or grow mishapen: They say farther, that the Wall reflects a Warmth to that side of the Fruit growing next to it, which has the same Effect as to the ripening of it,

as

as if the Sun was to shine on both Sides of their Fruit, and so prevents that unequal Relish, which is found oftentimes in one single Fruit which grew close to a Wall. To which they add, that in this Method the Trees need not be planted so close to Walls, as to want a sufficient quantity of Earth on every side of their Roots, which those commonly planted in the ordinary way must do on that side next to the Wall; and also that the Twigs of the Trees being tied with *Bast*, saves the Expence of *Nails* and Shreds, and will not be so subject to canker by too strait binding. And if I may add one Reason more towards the recommending these Wall-Espaliers (if I may so call them) it should be, that those Poles, which run horizontally, may be so contrived as to serve for Shelter to the *Blossoms* and young *Fruit*, from those *perpendicular Frosts*, which oftentimes are so injurious, as the Curious Mr. *Laurence* judiciously observes.

I have mention'd, among other observations, in the Chapter of *Kernel-Fruits*, that the Easterly Winds commonly are apt, when they blow directly upon *Pear-Trees*, to spoil the Fruit, by filling it with stony Substances; and no less prejudicial are they to the Blossoms of every forward blowing Tree, if it lie in their way; therefore I cannot recommend the Planting of *Abricots* in such Places, where the East-Winds may blow upon them: For I observe, that in *March* those Winds are always most frequent; and if they happen to come without Wet, they are infallibly attended with Blasts, as I shall endeavour to explain in another Place. I find that *Abricots*, planted against a West Wall, where they are shelter'd from these murdering Winds of the Spring, seldom fail to produce good Store of Fruit; while on the other hand all others in different Exposures often fail of Fruit, unless they have been guarded by artificial Shelters, such as I have seen in the Right Honourable the Lord *Parker's* Gardens, (I think) contrived by his Lordship; they are Matresses of Straw, fix'd in Frames of Wood, about four Foot wide, and seven or eight Foot high, which are made to remove

at

at Pleasure; so that they may always be so placed, as to interpose between the Wind and the Tree, without stifling the Blossoms, or beating them off as Mats commonly do.

In the Grafting, or budding of *Stone-Fruit*, I have observ'd, that such Trees as are inoculated near the Root of the Stock, are much more apt to shoot out unprofitable luxuriant Branches, than those that are budded, or grafted, five or six foot from the Root. I find the latter to make Fruit-Branches in such plenty, that hardly any Barren-shoots are found upon them, which seems to happen, for the same Reason I have mention'd elsewhere, that too great Plenty of Nourishment is ever a hindrance to the bringing forth of Increase, as well in *Animals* as in *Vegetables*; and that a Luxuriance of Growth in either, must always be checked to make them prolifick; so the length of Passage in these Standards, which the Sap takes in its Ascension from the Root, thro' the *Plum-Stock*, before it reaches that Part where it is to alter its Property in the Bud of the *Peach*, must, I think, contribute to weaken it, and rob it of that Luxuriance which it would have had, if it had been permitted to push out Branches near the Root, where undoubtedly it was more strong and vigorous.

The several Kinds of *Stone-Fruit* may have different Situations and Exposures; *Peaches* for Example, and *Nectarines*, with some forward *Cherries*, such as the small *May-Cherry*, and the *May-Duke*, with a forward *Plum* or two, should have a South-Wall; and if the Wall happens to be very high, I would advise it to be planted double (*i.e.*) with Dwarfs and Standards, that it may the sooner be cover'd.

Abricots, some choice *Pears*, and a few *Peaches*, may be the Furniture of a West-Wall; and some forward *Grapes* (for they blossom when Blights are commonly past) with some *Plums* and *Duke-Cherries* against an East-Wall, and to the North-Aspect we may set *Plums*, some *Winter-Pears*, *Carnation*, and *Morella-Cherries*, with some *Golden-Pippins*.

Plums

Plums will also do well in Standards ; and all sorts of *Cherries*, excepting the small *May*, and the *May-Duke-Cherries*, prosper best when they have Liberty. *Almonds* likewise will bear very well in the open Ground ; and the *Bruxelles Abricot*, whose Fruit is so excellent, will bear plentifully without the help of a Wall.

The *Peaches* which I most covet, are the *Nutmeg-Peaches*, for the sake of their early ripening, the *Common-Minion*, *Milits-Minion*, the *White-Magdalen*, the *Old-Newington*, *Belgard*, the *Admirable*, and the *Catherine-Peach*, which comes late, and is a certain Bearer. Of *Nectarines*, the *Red-Roman*, and *Orange-Tawny Nectarine*. *Abricots*, the *Masculine*, or *Forward-Abricot*, the *Orange* and the *Turky-Abricots* for Walls ; and for Standards, the true *Bruxelles*. *Plums*, the *Morocco*, *Imperial*, *Orleans*, *Muscle*, the two *Perdrigons*, *Queen-Mother*, *Violet*, *Abricot*, *Damascene*, *Cloth of Gold*, or *Drap d'Or*, *Royal*, *Bonum Magnum*, and the *White-Pear Plum* ; to which we might also add the *Damson*, which in my Opinion is not without its good Qualities.

Cherries ; the *Early* or *May-Cherry* ; the *May-Duke* ; the *Black*, *Red*, and *White-Heart-Cherries* ; the *Carnation*, the *Morella*, the *Flemish-Cherry*, and the *Common-Black* ; and also the *Cluster-Cherry*, well enough deserves a Place in our Gardens for the Curiosity of its Fruit.

There has been several ways practised to forward the ripening of Fruit : The late Marquis of *Wharton* had a Glass-Case made on purpose for that End ; and by the Help of Fire, against the Back of the Wall the Trees were nailed to, and under the Roots of the Trees, had several Kinds of Fruit very early. But of all the Inventions that I have yet seen, or heard of, the Contrivance of the ingenious Mr. *John Millet*, Nursery-Man at *North-End*, near *Fulham*, is to be preferr'd : I have seen in his Garden ripe *Cherries* in *February* ; and *Abricots*, *Roses*, and *Junquils*, above three Months before their natural Season, and those not in small Quantities, but in as great Abundance as if they had been the Product of Nature alone ; and this he does with the Assistance of

of Hor
ting H
Plants.

Of the
R Y,



every
Of
are c
Dut
eating
better
'till
ceed
may
the
nigh
Blac
here
be t
duc
Cul
or
See
foo
lov
Ro
pe
Cu
Se

of Horfe-Dung, judging it to yield a more gentle sweating Heat than Fire, and is therefore more natural to Plants.

CHAP. IV.

Of the GOOSBERRY, CURRANT, STRAWBERRY, RASBERRY, BERBERRY, and PHILBUD.



ALTHO' the Fruits, which I design to treat of in this Chapter, are so commonly known, that there is hardly any Garden without 'em; yet I am apt to believe, the right Method of raising and ordering them is not every where understood.

Of the *Goosberry* we have the following Kinds, which are chiefly worth our Notice, viz. the large *White-Dutch-Goosberry*, which produces an excellent Fruit for eating; the large *Amber-Goosberry*, which I think is better for baking while they are green, than to be kept 'till they are ripe; the *Walnut-Goosberry*, which exceeds all others for the Largeness of its Fruit, which may be gather'd for baking sooner than any other; and the *Champain-Goosberry*, which is ripe at least a Fortnight before any of the rest; and besides these, the *Black-Hairy Goosberry* is pleasant enough. If I should here enumerate all the other sorts I have seen, it would be to little purpose, seeing every Year is likely to produce new Varieties from Seeds; and the Rules for the Culture of any one sort will suffice for the rest that are, or can be rais'd.

This Kind of Shrub may be propagated either by Seeds, Suckers, or Cuttings; the first may be sown as soon as they are ripe, and will come up the Spring following: The Suckers should be taken from about the Roots of old Trees when their Leaves are fallen, in open Weather, and transplanted in Nurseries; and the Cuttings likewise will take Root, if they are planted in *September* or *October*. These Plants require a strong holding

holding Soil, and may be transplanted in *October* with more Safety than in the Spring.

We have three Sorts of *Currants* very different from each other, viz. the *Large Dutch-Currant*, the *Dutch Red-Currant*, and the *Black-Currant*: The first is an admirable Bearer, and will sometimes produce Fruit as big as some sort of *Grapes*, but I think are not so pleasant to the taste as the *Red-Currants*. The Kind which bears the Black Fruit, for Variety sake, as well as on Account of its great Virtue in Medicine, should not be wanting in a Garden, tho' scarce one in twenty can like its Flavour: These may be propagated like the *Goosberry*, and delight in the same Kind of Soil. I have known a curious Man, when the Fruit has been just ripe, tie up some of the *Red Currant*-Bushes in Mats, to preserve the Fruit upon them 'till *August* or *September*, and sometimes later in the Year, and it is practised by some to plant them against Walls to make the Fruit come larger; but I have never found them half so sweet as the Standards.

Both the *Goosberry* and *Currant* ought to be kept free from old Wood, never leaving on the Plants any Shoots (if possible) that exceeds three Years Growth; for the largest Fruit is always found upon the youngest Branches: These Fruits are ripe in *July*.

We have three sorts of *Strawberries*; the *Scarlet*, the *Hautboy*, or *Great White-Strawberry*, and the *Wood-Strawberry*: The first is ripe much sooner than either of the other, especially if it has had the Benefit of a good Exposure, and a light Soil, which always contributes to quicken Vegetation; however *Strawberries* delight not in any Ground so much as that which inclines to Clay: 'Tis in such Land we can only expect their Fruit to be large, and in abundance; witness the great Profits which the Gardeners about *Hammer Smith* (where the Soil is proper for making of Bricks) draw yearly from their Plantations of this sort of Fruit.

The *Great White-Strawberry* ripens next after the *Scarlet*; and last of all the *Wood-Strawberries*, which continue a long while, but chiefly if they be kept shaded after they begin to ripen.

As

As I know no place where *Strawberries* are so generally propagated as about *Hammer-smith*, so I shall prescribe the same Rules for their Management, as are commonly practised by the Gardeners of that Place.

They provide a parcel of Horse-Dung and Coal-Ashes, well mix'd and incorporated together, and lay on a sufficient Quantity of it upon their Land, to be dug or trench'd in *February*; then they lay up their Borders three Foot wide, and thereon plant the Slips, of whatever kind they see convenient, at about eight Inches apart; after which they set *Beans* for a Crop that Summer; for the *Strawberry-Plants* will not begin to bear Fruit to any purpose till the Year following, and even then not comparable to what they will produce the Year afterward, which is the third Year after Planting; 'tis then they have a full Crop, if extraordinary Drought does not hinder: But I should have also added, after the laying up of the Beds, that at every five or six Foot distance, they plant *Roses*, *Goosberries*, *Currants*, or *Sweet-Brier*, which turns to good Account at the Markets, besides the Advantage of the Shade those Plants give the *Strawberries*.

From a Piece of Ground thus planted, it is hardly to be imagined what Advantage arises to the Gardeners, if they are diligent to keep their Crop weeded, and well water'd, if the Season of their Blossom be dry.

Early in the Spring they clean them, and fling Earth among them to strengthen their Roots; and that the Ground may not lie too long idle, they plant *Savoy*s and *Cabbages* in the Alleys for the Winter. A Piece of *Scarlet Strawberries*, so ordered, will remain tolerable good for about five or six Years, but the *Hautboy* and *Wood Kinds*, should be renewed once in three Years, always minding to get the *Wood-Strawberries* fresh from the Woods, and not make use of Slips from the Garden, for those degenerate.

But there yet remains many Particulars relating to *Strawberries*, which are not practised by these Gardeners, as the stringing them, or pulling off their Runners in *July*, where the Roots are weak especially, so as to leave

leave all the Plants single, which is practised by some to make the Fruit large.

Again, to make them bear Fruit the *Autumn*, cut down the Leaves and Flower Stems just before the Blossoms open, and they will shoot out fresh, and bear ripe Fruit about *September*, as I have experienced.

Now if it is desired to have ripe *Strawberries* in *March*, it may be done by Planting some strong Roots in Pots, and putting them on a gentle hot Bed in *January*, giving them what Air may be convenient till they Blossom, and moderate Waterings at that time with Water a little warm'd : By these Instructions, and the Care of an ingenious Gardener, who will rightly defend them from Frosts, or too sharp Winds, we may have them produce Fruit as I propose. I cannot conclude the Culture of this Plant, without mentioning, that I have made Plantations of them in *April* and *May* with good Success ; and the second *June* afterwards I have gather'd very good Fruit from them.

The *Raspberry* is the next to be consider'd : We have two Sorts of them, the *Red* and the *White* ; the latter is the greater Rarity, but in my Opinion it is not of so good a Flavour as the *Red* : These delight in such Soil as agrees best with *Strawberries*, and are propagated by Slips taken from the Roots in *March*, for that is the best Season to plant them in : Some Gardeners plant single Lines of them, leaving the Distance of about a Foot between the Plants ; others make Beds for them of three Foot wide, and plant three Rows in a Bed, both which Ways I find to succeed very well : The first *Summer* after Planting they will sling up some Suckers from the Roots, and put out some few Shoots from the old Stems that were left remaining when they were planted ; but as those Stems are never left above a Foot long when we plant them out, we cannot expect any Quantity of Fruit from them the first Year, nor indeed any vigorous Shoots from the Roots till the second Year, so that it will be the third *Summer* after Planting before we must expect a full Crop, for the Fruit is al-

ways

ways fo
The ch
to keep
prune th
to leave
must be
and we
ginning
The
Branch
delight
The Fr
used an
that th
and ter
which
Berbern
ers sha
may do
fresh g
ing W
spread
and m
the M
I have
make
the In
ciari h
this F
the fr
the C
Esqui
of cu
noug
and i
Laye
T
the
our
only
P

ways found upon the Shoots of the preceding Year. The chief Culture necessary for this Kind of Plant, is to keep them clean from Weeds in the *Spring*, and prune the Tops of the strongest Shoots of the last Year to leave them about three Foot high; and that Work must be done in *March*; as also to cut away all dead and weak Branches. The *Raspberry* ripens in the beginning of *July*, and lasts till the End of the Month.

The *Berberry* is a pleasant Shrub, bearing beautiful Branches of yellow Flowers in the *Spring*, and no less delightful Clusters of red Berries towards the *Autumn*: The Fruit is of a sharp Taste when it is ripe, and seldom used any other way than in Sauces: I have been told, that the Leaves of the *Berberry*, when they are young and tender, may be dry'd to imitate the *Indian-Tea*, which they call *Bohea*; and indeed the Figure of the *Berberry-Leaf* is not unlike it. If any one of my Readers shall think it worth his while to make a Trial, he may do it after the following manner: Lay the Leaves fresh gather'd upon a Sieve, placed over a Vessel of boiling Water till the Steam has softened them; then spread them upon a Copper-Plate over a gentle Fire, and move them to and fro till they roll up, which is the Method they use for drying their *Tea* in *China*, as I have heard; but I would advise such as intend to make the Experiment, not to be over hasty in drinking the Infusion of such Leaves, before some skilful Physician has first given his Advice. There are two Kinds of this Fruit, one without Seeds, and the other with Seeds; the first is so rare, that I have yet only seen it grow in the Gardens of my worthy Friend *Samuel Reynardson*, Esquire, at *Hillington*, among his numerous Collection of curious Plants; but the other is found frequent enough in most Gardens, the Plant loves a Loamy Soil, and is increased easily by Suckers from the Root, or Layers in the beginning of *March*.

The *Philbud* is order'd like the *Hazel*, mention'd in the first Part of this Treatise, but is allow'd place in our Gardens, on account of its thin Shell, which is the only Excellency it has more than the common *Hazel*,

in my Opinion. This and the *Berberry* should be planted in the most remote Parts of the *Kitchen-Garden*.

CHAP. V.

Of BLIGHTS.



As a *Blight* is the most common and dangerous Distemper that *Plants* are subject to, I shall endeavour to explain by what Means *Vegetables* are affected by it; and if I shall be so happy from the Observations I have made, to discover the Cause of it, the Remedy may be then more easily found out, and the Gardener will with more certainty hope for Success from his Care and Labour.

I shall be the more particular in discoursing upon this Subject, as it will afford me an Opportunity of opening to the View of my Reader a wonderful Scene of Nature, which hitherto has been slightly touch'd upon by Writers, or overlook'd, or despis'd by unthinking Men; and shall endeavour from the whole to draw such Consequences as may be both profitable and delightful.

Plants of all Degrees are subject to *Blights*, which are so variously communicated to them, that sometimes a whole Tree will perish by that Distemper; now and then a few Leaves or Blossoms only, and perhaps a Branch or two will be shrivel'd or scorch'd by it, and the rest remain green and flourishing. I have yet never observ'd this Disease to happen among *Plants*, but upon the blowing of sharp and clear *Easterly Winds*, which are most frequent in *England* about *March*; but sometimes happen in other Months. It is very observable, that the *Caterpillars* generally attend these Winds, chiefly infecting some one Sort of Tree more than another, and even then not every where upon the Kind of Tree they attack, but some particular Branches only; from which Observations I think we may draw the following Inferences; either that the Eggs of those In-

Fig. III.

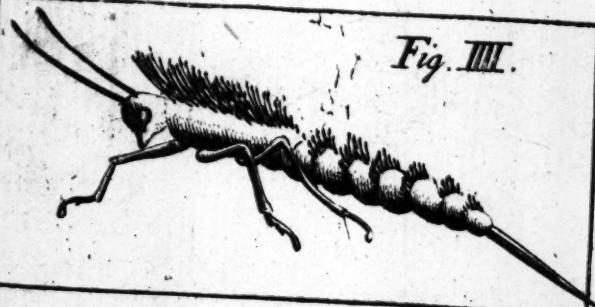


Fig. VI.



Fig. V.



Plate I.

Fig. III.

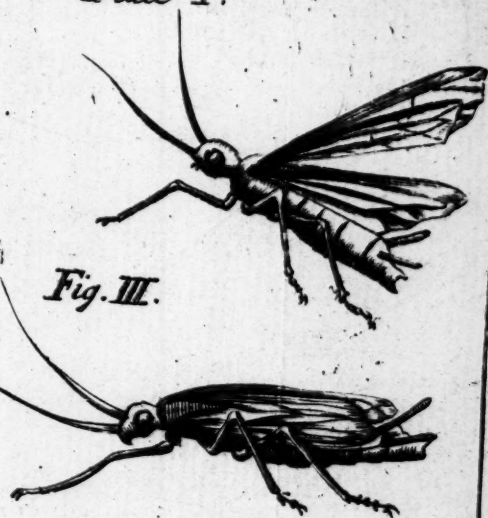


Fig. I.



Fig. II.



Fig. V.



Insects are brought to us by the *Easterly Winds*, or that the Temperature of the Air, when the *Easterly Winds* blow, is necessary to hatch those Creatures; supposing their Eggs were already laid upon those infected Parts of the Trees the preceding Year.

The *Blight*s, which are attended with large *Worms* or *Caterpillars*, seem to be rather hatch'd with the *East Wind*, than that the Eggs of those Creatures are brought along with it; but those *Blight*s which produce only those *Insects* which occasion the curling of the Leaves of Trees, may proceed from Swarms of them, either hatch'd, or in the Egg, which are brought with the Wind.

Some, perhaps, may object, that the *East Wind* is too cold to hatch these Creatures; how comes it then that we find them hatch'd when those Winds reign? Or is it reasonable to conjecture, that the same degree of Heat is necessary to enliven an *Insect*, as is requir'd to hatch the Egg of a Pullet? The *Insects* of *Norway*, *Iceland*, and such like cold Climes, must certainly have less Heat to produce them, than Creatures of the same Race must necessarily have in those Climates which lie nearer to the *Sun*. Every Creature, without doubt, requires a different Period of Heat or Cold to enliven it, and put it in Motion; which is prov'd by so many known Instances, that I conceive there is no room for any Dispute upon that Score.

But there may yet be another Question, *viz.* Whether it is not the *East Wind* of it self that blights, without the help of *Insects*? But that may be easily solv'd on my Side; for that if it was the Wind alone that blighted, then every *Plant* in its way must unavoidably be infected with its Poison; whereas we find the contrary, only a single Branch it may be, or some other distinct Parts of *Plants*.

And again, to shew how reasonably we may conjecture that 'tis *Insects* which thus infect the Trees, let us only consider, that every *Insect* has its proper *Plant*, or Tribe of *Plants*, which it naturally requires for its Nourishment, and will feed upon no other Kind what-

soever: Therefore it is no wonder to see one particular sort of Tree blighted, when all others escape; as for example, that Wind which brings or hatches the *Caterpillars* upon the *Apple-Trees*, will not any way infect the *Pear*, *Plum*, or *Cherry* with *Blights*, because were the Shoals of *Insects* natural to the *Apple*, to light only upon those other Trees mention'd, they would then want their proper Matrix to hatch in; or if they were hatch'd already, they would perish for want of their natural Food; so that 'tis morally impossible that all sorts of Trees should be blighted at the same time, unless the Eggs of every Kind of *Insect*, natural to each Tree, could be brought at one time with the Wind, or that an *Easterly Wind* could contain in it at once as many differing Periods of Cold or Heat, as would be requir'd to hatch and maintain each differing Kind of those Creatures.

The common People in the Country seem to be of my Opinion, that *Blights* are brought by the *East Winds*, which they are so well satisfied brings or hatches the *Caterpillar*, that to prevent the too great Progress of *Blights*, it is common for them when the *East Winds* blow, to provide large Heaps of Weeds, Chaff, and other combustible Matter on the Wind Side of their Orchards, and set them on Fire, that the Smoak may poison either the *Insects* or their Eggs, as they are pass'd along. By this Contrivance I have often known large Orchards preserv'd, when the neighbouring Parts have suffer'd to the Loss of all their Fruit.

And I have also seen these Fires made with good Success to destroy the *Caterpillars* even after they were hatch'd, and had began to devour the Trees, by suffocating them, and forcing them to drop to the Ground, where they have been swept up in large Quantities and kill'd. I have heard it affirm'd, by a Gentleman of Reputation, that *Pepper-Dust*, being powder'd upon the *Blossoms* of any Tree, will preserve them from *Blights*; which may be, because *Pepper* is said to be present Death to every Creature but to Mankind. Now altho' this last Secret is too costly for common Use, yet it may be of Service

in some particular Place for the Tryal of a new Tree, where a Taste of the Fruit is desired ; and besides, it helps to inform us, that *Blight*s are occasion'd by *Insects*, or their Eggs, lodging upon a Plant, and that *Pepper-Dust* will not suffer them either to live, or to be hatch'd.

Another Remark (which to me is Demonstration) that *Blight*s proceed from *Insects*, or their Eggs (being brought with the *Easterly Winds*) was the total Destruction of the *Turnips* last *Winter*, on the *West* side of *London* ; about *October* we had dry *Easterly Winds* for a Week or ten Days, and several thousand Acres of *Turnips*, which were then well grown, turn'd yellow and decay'd, unless in such Places only as were shelter'd by Hedges, Houses or Trees, where they remain'd green 'till the *Insects*, which came with the Wind, in about a Week's time destroy'd those also. Some Farmers imagin'd that the Birds which were there in great Flocks, had eaten the Leaves of their *Turnips*, and contriv'd all Means possible to destroy them, 'till I convinc'd them that the Birds were rather Friends than Enemies, and came there to feed upon the *Caterpillars*, which were in such great Numbers, that each *Turnip-Plant* had not less than a thousand upon it ; and that *Insects* frequently pass in Clouds and numberless Armies after this Manner, is plain from several Instances, which have happen'd in my time, and one of them the last *Summer* (I think in *June* ;) one of these Swarms passing over *London* were suffocated, (I suppose) with the Smoak of the *Sea-Coal*, and dropp'd down in the Streets, insomuch that a square Court belonging to the *Royal-Society* was almost cover'd with them ; these were of the *Fly Kind*, and fully perfected.

It may be ask'd, perhaps, how these *Insects* came to destroy the *Turnips* only, and not touch the other *Greens* of the *Fields*, as *Cabbages*, *Carrots*, *Parsnips*, and the like? Every Herb has its peculiar *Insect*, like the Trees I have mention'd : Nay, more than this, the *Insects* which Nature has design'd to prey upon the *Flower* of a *Plant*, will not eat the *Leaves*, or any other Part of

the same *Plant*. The *Leaves* of *Plants* have their *Insects* natural to them, the *Bark* and *Wood* likewise have their respective Devourers; and those several *Insects* have other Kinds, which lay their Eggs, and feed upon them.

The *Flowers* of the *Province-Rose*, before they are open, produce and nourish the Insect, in *Figure 1* of the first Plate, after the Eggs have been laid upon them. A. is the *Nympha* or *Caterpillar*, which feeds upon the *Rose-Buds*. B. the *Aurelia* of the same, which for a time lies as it were in a state of Death, fasten'd with fine filken Threads to the *Leaves* of the *Rose-Tree*, and at length resuscitates and comes forth with Wings adorn'd with curious Variegations of Black and Yellow, C. and eats no more; while it lives in this last state, it seems to be the most perfect, by laying then its Eggs upon the Bark of the same Tree (about 100 in Number) after it has coupled with a Male of its own Tribe. This Process from the Egg to the Fly, is by my Curious and Learned Friend Mr. *James Petiver*, F. R. S. made an Emblem of the Resurrection; the *Nympha*, he observes, feeds and grows to a certain Degree of Perfection, as all Animals do; then for a time is laid up without Motion in a state of Death, and appears at last in its utmost Perfection, with Wings beautifully adorn'd with pompous Colours, and breathes only the purer Parts of the Air.

The *Leaves* of *Plants* have also their *Insects*. The *Silk-Worm*, for Example, upon the *Mulberry*, the *Common White-Butterfly* upon the *Cabbage* and *Plants* of the same Tribe: And the *Bark* and *Wood* of *Trees* have also several Kinds of *Beetles*, which prey upon them, and are large enough to be discern'd without a *Microscope*. There are yet other Kinds which are naturally dispos'd to feed upon the *Fruit* of *Trees*, such as we often find in *Apples*, *Pears*, and *Nuts*; and the *Roots* of *Trees* are also the proper Food for *Worms* of a different Race from those already mentioned, such as are long, scaly, and have many Feet, by some call'd *Canker-Worms*, which by devouring the *Roots* of *Trees*, cause them to languish

guish for a time, and at length die; and the very Pith of Plants is not safe from Enemies of this sort; how often are the *Carnations* and other *Flowers* destroy'd by little *Worms* which eat their Pith?

And all these, if I mistake not, have their *Ichneumon* Flies, which feed upon them, and by the help of fine *Tubes* growing about them, convey their Eggs into the Bodies of the *Nymphæ* or *Caterpillars*, where they hatch as soon as the *Caterpillars* are laid up in *Aureliæ*, and feed upon them 'till they are themselves perfected, and make their Way into the World; this I am sure of in many Cases, as I have often seen, when that excellent Lady, the late curious Duchess of *Beaufort* diverted her self with enquiring into the Nature of *Insects*, that the *Aureliæ* of several Months have brought only *Ichneumon* Flies of different Kinds: See Fig. II. Plate I. No. 1, 2, 3. The first is the *Ichneumon* Fly, bred upon the small green *Caterpillar* which feeds upon the Red *Sallow*: The second feeds upon that bred upon *Borage*; and the third feeds upon the Insect commonly found upon *Campion* or *Cockle*; and it may be these *Insects* which prey upon others, are not without some others of lesser Rank to feed upon them likewise, and so to Infinity; for that there are Beings subsisting, which are not commonly visible, may be easily demonstrated, if there is any Truth in a *Microscope*.

The last *Winter*, during the most severe cold Weather, a Friend of mine was desirous to look into my *Microscope*, and was so impatient that he would not allow me time enough to provide any new Subjects for the *Glasses*, but contented himself with examining some minute Parts of Plants, which had lain between the small *Glasses* for above fourteen Months; among them he happen'd to pitch upon a small *Hair* of the *Leaf* of the common *Mouse Ear*, when on a sudden he discover'd a living Creature of the Figure of a *Beetle*, in appearance an Inch in Length, walking between the *Glasses*: He was much surpriz'd to find it so perfect in all its Parts, and gave me the *Glasses* that I might observe it, and delineate it for him; which I did, and by Computation

found it to be more than one thousand Times less than the least Dust of Sand visible to the naked Eye. I was then willing to try whether the Cold, which was severely felt by us, was not to that minute Creature equal to the Degree of Warmth, which hatches other Insects of larger Size; and for that End I held the *Glass* about a Yard distance from a slow Fire about the tenth Part of a Minute; that trifling Heat to us, was so intense to it, that in that short space of Time, it was thereby burnt to Death, and shrivell'd to a fourth Part of its former Size, and seorch'd out of Shape; this brought to my Mind the *Insect* Mr. Ray mentions, which is hatch'd and dies in a Day, and also the several Periods of Life appointed to the several visible Creatures upon Earth; and I could not help reflecting at the same time, that as I found, by the help of a *Microscope*, that Quantity was only computed to be great or little in Proportion to what Objects our Eyes are capable of seeing without the help of *Glasses*; so I also imagined, that Space was confin'd to our Understanding by the same Rule; and that the Life of that Creature, which lives only one Day, is of the same Length or Duration to it in Proportion to it self, as the Term of 100 Years is to Mankind; that is, about three Minutes of that *Insect's* Life is equal to a Year with us; and the coldest Air of the last *Winter*, to the *Insects* I saw, was equal with the *Summer's* Warmth to such *Animals* as then only come abroad: For the Heat, which kill'd this *Insect*, and was as a violent Fire to it, was hardly warm enough to be discern'd by me.

It is wonderful to consider the Fineness of the several Parts of a Creature even so minute as this; (for the *Microscope* has discover'd much smaller) how small must the Organs of its Senses be in Proportion to its Body! The Eyes, perhaps, a thousand times less, and the other Parts answerable to them; may we then not reasonably conclude, that with such Eyes it is capable of discerning other Bodies, which are as minute, and of as distant smallness to its self, as the smallest Creature capable of our Sight is to us? For I think it is plain, that

that every *Animal*, as their Eyes are greater or smaller, or of different Make, have certain Bounds of Sight, beyond which they cannot see without help, such as the *Microscope*, *Telescope*, &c.

But alas ! How trifling an Object was the *Insect* I have mention'd in Comparison to those discover'd by Mr. *Lewenhoeck*, in a Quantity of *Pepper-Water*, no bigger than a Grain of *Millet*, in which he affirms to have seen above 10000 living Creatures, and some of his Friends at the same time witness to have seen 30000, and others above 45000 Creatures moving in that small Quantity of Water ? Nay, they tell us, that because they would be within compass, they only related half the Number that they believ'd they had seen.

Now from the greatest of the Numbers mention'd, it is infer'd, that in a full Drop of Water there will be 8280000 of these *Animalcula*, which if their Smallness comes to be compar'd, a Grain of Sand broken into 8000000 of equal Parts, one of those Parts would not exceed the Bigness of one of these *Insects*.

These Observations of Mr. *Lewenhoeck*, were not only confirm'd by the Famous Mr. *Hook*, but were likewise improv'd by him : He tells us that after he had discover'd vast Multitudes of those *Animalcula* describ'd by Mr. *Lewenhoeck*, he made use of other Lights and Glasses, and magnified them to a very considerable Bigness ; and that among them he discover'd many other Sorts much smaller than those he first saw, some of which were so very minute, that Millions of Millions of them might be contain'd in one Drop of Water.

This indeed might exceed the Belief of those who are not conversant with good *Microscopes* ; but I am satisfied, whoever once understands their Use, and makes Tryal of those made in our own Country by the late Mr. *Mellen*, or those of Mr. *Wilson* and Mr. *Marshall*, will not want any Argument to convince them of the Truth of what is here related.

If then it is true, that there are Creatures of that exquisite Smallness here mention'd, and that those Creatures have Life and Motion, as it is evident they have, what

what must we then think of their Muscles and other Parts, as Mr. *Hook* observes? Certain it is (*says he*) that the Mechanism by which Nature performs the Muscular Motion is exceeding small and curious; and to the Performance of every Muscular Motion in large *Animals*, there are not fewer distinct Parts concern'd, than many Millions of Millions, which are visible thro' a *Microscope*.

Mr. *Lewenhoeck* has lately inform'd us, that upon a nice Examination of the *Ant*, he finds, that it is not wanting of any Part which is judged to be necessary and conducive to the Life and Motion of the largest *Animals*; and he further adds, that the Filaments or little Threads which compose those several Parts of the *Ant*, are as large as those which do the same Office in an *Ox*, or any Creature of the largest Size, somewhat like *Silk*, which when it is first spun by the Worm, is all of one Fineness, but may be wove into the broadest Satin, as well as serve to compose the narrowest Ribbon; the one only taking a larger Quantity of those fine Parts than the other. And indeed, so far as I have observ'd, it is the same in *Plants*; the *Oak*, the *Gourd*, and the meanest *Moss*, are compos'd of Principles of the same Fineness.

This Account may suffice to shew us, that there are Beings subsisting, which are not commonly visible, and therefore it is easie to conceive, that the most gentle Air is capable of blowing them from Place to Place, and thro' their extraordinary Lightness it is as readily inferr'd, that they may thus be convey'd by the Winds to us from the most remote Quarters of the World, but more especially from the *North-East* Parts, where the Cold is intense enough to give Life to these small Creatures, and from whence there is not a Sea of a large Extent enough to destroy them while they are passing over it; for it is my Opinion, that the Vapour which naturally arises from the Sea, is much warmer than what generally is evaporated from the Earth, and consequently inconsistent with the Life of those minute Creatures, but chiefly those Vapours which rise from the main Sea, where

where the Land or fresh Waters are least prevailing; and therefore, were those *Insects* to be blown to us from the *North-West* Parts of *America*, I suppose the length of Sea they must then pass over, would kill them before they came to us, and perhaps is the Reason why the Winds from thence are never known to blast any of our Trees, and are always much warmer than the *North-East* Winds, which come over a narrower Sea, which has many Rivers running into it. The *Orange-Tree*, in such particular manner, delights in the Warm Air of the Sea, that in the inland Parts of *Italy* they will perish by the Winter's Cold, if they are not housed; and yet several Degrees more *Northerly*, where they grow near the Sea, they flourish, and defie the most rigorous Season. It is observable, that the main Sea of it self never freezeth (as some say) not even under the *Poles*, but only in such Places where vast Rivers run into it; as in the *Sound*, and in *Hudson's-Bay*, where it is mix'd with fresh Water, the Frost has Power over it. It seems reasonable to believe also, that the Vapour which ariseth from the Sea is destructive to *Insects*, because we find how much the *Salt*, taken from the Sea-Waters, contributes to the Preservation of Bodies from *Putrifaction*, which I think is always attended with *Insects*; and if the common *Salt* of the Sea-Water is so great a Preservative against *Insects* and *Putrifaction*, I see then no Reason why the Vapour arising from the same Fund of Water, should not partake of the same Virtue.

The Receipt to prevent *Wheat* from being smutty (which is a Blight common to Corn) seems to confirm what I have said; and I think we cannot enough commend that worthy Person (whoever it was) that so frankly communicated it, and so generously publish'd it for the common Good; happy would it be for the Nation, if every one would so generously contribute towards its Welfare!

The Receipt teaches us first to wash the *Wheat* through three or four several Waters, stirring it round each time with a large Stick backwards and forwards with great Force; and with a Skimmer each time, take
off

off all the light *Wheat* : When this is done, put your *Wheat* into a Liquor prepar'd in this manner.

Put into a large Tub, which hath a Tap, a sufficient Quantity of Water ; then put as much *Salt* into it, as when 'tis well stirr'd about, will make an Egg swim ; then add as much more *Salt* as was before, and stir it very well, and to this put two or three Pounds of *Alum* beaten very fine, and stir it about.

This you are to use as you do your ordinary *Brines*, only you must let your *Wheat* steep thirty or forty Hours, for less signifies nothing ; tho' the common Opinion is, that steeping so long kills the *Seed* in the *Wheat* ; but Experience teaches the contrary.

You must take your *Wheat* out the Night before you sow it, and sift some slack'd *Lime* on it, which serves only to make it dry enough to sow : 'Tis necessary to add some more Water to the *Brine* in a Week or Ten Days Time, as it wastes, and *Salt* proportionable to the Water, and about a Pound of *Allum*.

Note, Many Farmers steep their *Wheat* in a *Brine*, yet have Plenty of *Smutty Wheat*, because they don't make their *Brine* strong enough, and take their *Wheat* out too soon.

Note also, Many Farmers have suffer'd greatly by *Smutty Wheat*, especially in a dear Year, when such *Wheat* will not sell for above five or six Shillings a Bushel ; whereas that which is free from *Smut*, will sell for ten, eleven, or twelve Shillings ; and such *Smutty Wheat* being eaten chiefly by the poorer People, and being unwholesome, occasions Sickness ; therefore for the Benefit of the Publick this is printed.

From hence we may learn how much *Salt* contributes to the Destruction of *Insects*, which occasion the *Smut* upon Corn ; and it is not unlikely, that such *Smut*, when it happens to be found upon Corn, may cause Sickness to such as eat of it ; for I am very apt to believe, that the most Epidemical Distempers Mankind is subject to, proceed from Poisonous *Insects*, which are either eaten unregarded, or are suck'd into the Stomach

with

with the Breath, as that worthy Gentleman Mr. *Balle* so curiously observes, in a Letter I have receiv'd from him relating to infectious Distempers, which I shall annex to this Chapter, as it contains many Observations, which may help to explain and confirm what I shall offer concerning *Blights*.

I have already taken notice, that every distinct Part of a *Plant* has its *Insect*, which is naturally disposed to feed upon it, and those all different from one another, as well in Shape as in Colour. It seems reasonable enough also, that every *Insect*, as it has a different Kind of Food, is of a different Virtue, perhaps partaking not only of the *Plants* they feed upon, but of the Qualities of each distinct Part of those *Plants* which are their Food, for as I have observ'd that every *Plant* has Channels peculiar to the Conveyance of its several Juices, such as those minute Pipes in the Wood, which admit only the rising Vapour from the Root; and those other large Passages between the inner Bark and the Wood, by which that Vapour returns when it is condensed into a Water: And again, the different Sizes of those Vessels which make the *Parenchyma* of the several Barks, and respectively receive from the falling Sap such Parts only as they are distinctly made to imbibe, not to mention those other Vessels of different Frame in the Leaves, Flowers, and Fruits of *Plants*, which can only admit of such Particles of Sap, as they are all separately appointed to receive; I say, from these Observations it appears, that every Part of a *Plant* has then its distinct Virtue from the rest; and so the *Insects* feeding upon each respective Part, must then be of differing Qualities from one another, and I conceive might be of greater Use in Medicine than the *Plants* themselves, if they were once try'd; as the *Cantharides*, which are *Insects* that I think feed upon the *Rose-Tree*; the *Alkermes*, which are bred upon the *Shrub-Ilex*; and the *Cochineal*, which is an *Insect* lately found in *Carolina* to feed upon the *Indian-Fig*, or *Prickly-Pear*; all which Creatures certainly contain the finest Spirits of the *Plants* they feed on.

I have often thought that it might be of some Use, if such *Animals* as are commonly bred for the Food or Nourishment of Mankind, were sometimes fed with particular Diet, so to alter the natural Vertue or Quality of their Flesh; and especially, if we were to practise upon such as are frequently used in Medicine. The *Thrushes* in *Italy*, which at one time of the Year feed upon *Myrtle-berries*, have then the Flavour of *Myrtle* in their Flesh, and consequently some of its Vertue at the same time. So I doubt not but *Snails*, (which differ so much from what I call *Insects*, that they will eat of almost any *Plant*) may be made to alter their Vertues, by feeding them upon some particular sort of *Plant* which we have a Mind to extract any certain Vertue from; but this I leave to be better consider'd by those whose proper Business it is.

Insects infect *Plants* several ways, besides actually devouring them; as for Example, the *Peach-Trees*, which so frequently have their Leaves curl'd up in the Spring, and are at that time cover'd with a kind of *Honey-Dew*, are then generally attended with great Numbers of *Ants* which resort to them; but it is not from the *Ants*, as is commonly imagin'd, that this shriv'ling of the Leaves proceeds; the *Ants* rather help the Tree than injure it; they come thither to feed upon certain little *Insects* which harbour on the Back of the Leaves, wounding the *Parenchymous* Parts of them, from whence they suck the Juices of the *Plant*; and by that frequent wounding, causes so many *Escars*, that the Leaves cannot avoid curling, and becoming gummy. The *Insects* I mention may be easily discern'd without Glasses, but being magnified with a common *Microscope*, appear as large as the third Figure of the first Plate. *Plum-Trees* are sometimes distemper'd in the same Manner with *Insects*, somewhat like those upon the Leaves of the *Peach-Tree*; and the Bark of the tender Shoots of both those Trees is frequently pinch'd by other small *Insects*; one of which I have cut out of it, and magnified as in the fourth Figure, Plate I. Its Back was cover'd with Bristles, which grew the contrary way to those commonly found in other

ther *Animals*: Besides these, some *Peach-Trees*, and the *Almond-Tree*, have their Leaves frequently blister'd and turn *Red*, without any appearance of *Insects*; but if we examine them with a good *Microscope*, we may easily perceive the *Parenchyma* of them to be fill'd with little white *Worms*; which according to the Nature of other *Insects*, would in time come to have Wings, and I should have likewise given a Figure of, if I had not mislaid the Designs of them.

These *Insects*, thus invading the young Shoots, will certainly destroy the Trees, if they are not carefully prun'd off as soon as they appear, as I constantly do whenever I see 'em: And I am inform'd, from a Person of Honour, that to prevent the Insults of these or any other *Insects*, he has known it practis'd, to bore a Hole with a small Gimlet sloping downwards thro' the *Bark*, so as to reach the Wood of the Tree, and pouring into it some *Quick-silver*, about half an Ounce, or more, according to the Bigness of the Tree, and stopping it up, the *Insects* then harbouring upon it will infallibly be destroy'd; but if the *Mercury* reach the *Pith*, the Tree will be endanger'd: And I cannot chuse but be of his Opinion, altho' I have not made the Experiment, because I have been Witness of the Effect that *Crude Mercury* has had upon *Worms* in humane Bodies, which answers to what my Author has said of its Operation upon the like Kind of Creatures in Trees: And if then by putting *Mercury* in one part of a Tree, the whole is so affected by it, as to destroy the *Insects* feeding even upon its most remote Parts, I think there will be no Occasion to dispute the Circulation of *Sap* in *Plants*; but the *Insects*, which prey upon the Juices of the *Oak*, and have their proper Matrices, or Beds for hatching in upon the several Parts of that Tree, yet produce other Effects than what I have hitherto mention'd. The *Oak-Berries*, which we find in *May* and *June* upon the *Leaves*, and sometimes upon the *Strings* of *Male-Blossoms* or *Catkins*, are occasion'd by a Kind of *Fly*, not much unlike a *Flying Ant*, which bites the most spongy or parenchymous Part of the *Leaf*, or the tender Part of the *Catkins*,
and

and lays its Egg in the Wound, which perhaps, by virtue of some Juice which the *Insect* leaves at the same time, inclines the wounded Parts of the Tree to grow over the Egg so as to enclose it intirely, and make it swell 'till it is hatch'd and grown big, and strong enough to eat its way out: I have seen of these *Oak-Berries* as big as large *Peas*, and when they are at their full Growth, are sometimes, if they be expos'd to the Sun, of a brownish red Colour.

There is another Kind of *Insect*, which attacks the more rough Part, such as the *Bark* that encloses the Bole near the Root of the *Oak*: The Eggs of this are shut up in a Kind of Berry, somewhat less than the former, but of a most beautiful Red Colour; they are commonly to be found in *May*, as I have observed in many Places in *Richmond-Park*. Besides these, the *Oak-Apples* proceed from other Wounds made by *Insects* of a different Kind in the *Bark* of the tender Twigs, in which they lay many Eggs, that turn afterward to Worms, as I have often seen: These which they call *Apples*, no more than the *Oak-Berries*, are Fruits naturally design'd by Nature for the Tree; but in the manner I relate, are produced by Accident, where the several *Insects* happen to light.

It would be tiresome to relate all the several Ways that *Plants* are attack'd by *Insects*; and indeed would be needless to do it, if I was capable, seeing that so far as we yet know concerning these things, two or three general Remedies put in Use against those Creatures, will suffice to hinder them from making any considerable Progress: The *Matrasses* of *Straw*, which I have already mention'd, are good Guards against the *Easterly Winds* to shelter *Wall-Fruit*; and a good Fence of *Timber-Trees* to the East of our *Orchard* will contribute to preserve our *Standards* from the *Caterpillar*, which if they should happen to come, may be destroy'd by the *Smoak* of *Wet Straw* or *Weeds*: And in case our *Peach-Trees*, and such like Kinds of Fruit, should be unfortunate enough to be invaded by those small *Insects* I have describ'd, the pruning off those Leaves or Twigs, as I have

have al
as I dou
have di
don, it
nions ex
have be
which
posing
of minu
in the
posaf c
might,
by was
been b
nions un
sects.

The
their M
ous, a
avoid n
Ambul
delinea
Insects
ly Lea
and cu
celebra
to the
Ruysb
Ornan

Bot
from
of the
lowin
per T
the B
shoot
Tree
Body
from
like V
P A

have already hinted, is a sure way to free us from them, as I doubt not would be the Use of *Quick-silver*, as I have directed. In the time of the *Great Plague* in *London*, it was propounded to have large Quantities of *Onions* expos'd in Boats upon the *Thames*, which was to have been continually bruis'd, chop'd and moved about, which it was imagin'd would abate the Infection, supposing the *Plague* to proceed from innumerable Armies of minute unwholsome *Insects*, which were then floating in the Air, and drawn in with the Breath: If this Proposal could have had the desired Effect, then I think we might, by the same Rule, destroy the *Insects* upon Trees, by washing the Leaves with Water wherein *Onions* had been bruis'd and steep'd, or by laying some bruis'd *Onions* under our Trees that are the most assaulted by *Insects*.

There remains yet one thing relating to *Insects*, and their Manner of infecting of *Plants*, which is so curious, and I believe so little known, that I cannot well avoid mentioning it; and that is concerning the *Folium-Ambulans*, or *Walking Leaf*; two Kinds of it I have delineated, *Fig. IV. and V.* in the first Plate, from the *Insects* themselves, now in the Cabinets of the excellently Learned Sir *Hans Sloane*, Bart. of that indefatigable and curious Naturalist Mr. *James Petiver*, and in these celebrated Collections of Curiosity in *Holland*, belonging to the famous Mr. *Vincent* of *Harlem*, and Dr. *Frederic Ruysb* of *Amsterdam*, all of these Gentlemen, shining Ornaments of our *Royal Society*.

Both the wonderful *Insects* I mention are brought us from *Amboyna*, where there are many different Species of them, and as I am inform'd, are produc'd in the following Manner: The *Insect*, when it has found its proper Tree of Nourishment, lays its Eggs separately in the Buds of it, which hatches when the Buds begin to shoot; the *Insect* then is nourish'd by the Juices of the Tree, and grows together with the Leaves 'till all its Body is perfected; and at the Fall of the Leaf, drops from the Tree with the Leaves growing to its Body like Wings, and then walks about; this is not common

enough with us to be easily believ'd, and what I should not have ventur'd to mention in this Place, if the *Insects* themselves were not to be met with in the curious Cabinets of our own Country.

What I account the most curious Point belonging to this Relation is, That the *Sap* of any Tree should be so naturally adapted to maintain at once both *Vegetable* and *Animal* Life; and by that Means to unite the Parts of two Beings, so distinct from one another as *Plants* and *Animals*, and circulate the same Juices equally in the Vessels of both. Indeed we have Instances enough to shew us how necessary the Juices of *Plants* are to the breeding up of some *Insects*, and even to confirm that some Kinds of *Insects* cannot be brought to live without their Eggs are properly lodg'd in, and entirely envelop'd with some certain Parts of *Plants*; as those *Insects*, for Example, which Nature has allotted for the Leaves of the Oak, and which make the *Oak-Berries*; but that a *Leaf* of a *Plant* should so unite it self with an *Insect*, as to make one distinct living Body, is wonderful.

The Curious Mr. *Vincent*, above-mention'd, once shew'd me the Picture of a Branch of the Tree which the *Insect* Fig. IV. grew upon, in which was painted these strange Creatures of several Sizes, adhering to the Tree in the Manner I have related: The Head and small Parts of the Legs were of a light brown Colour; and the Wings and other Parts were of the Colour of the common *Bay-Leaf*; which Colours the *Insect* retains even after it has been dead several Years.

The other of this Kind, Fig. V. has Wings of the Figure and Size of the Leaves of the *Spanish Broad-leav'd Myrtle*; but all its Parts, when I saw it, were of a *Feullemort* Colour.

Now as every *Plant* growing upon the Land is subject to be infected by *Insects*, so the *Plants* of the Waters are also annoy'd by living Creatures that prey upon them. All sorts of *Gnats* lay their Eggs upon the Waters; and so soon as they are hatch'd, and possess that Degree of Life answerable to *Caterpillars*, we see them frisking about in the Water for a time, commonly making

king the
like La
time, a
Troops
bout J
veral o
pective
as I yet
sects: I
Particu
living
Forms.
pose;
concer
conclu
and ot

S
U
sects b
by lo
ment,
a Bli
Y
made
kind,
that
fore,
lect
that
T
tilen
some
Plag
ing

king their Motions in the Figure of an S. These *Nymphæ*, like Land *Insects*, lay themselves up at their appointed time, and from that State resuscitate and fly away in Troops: These Kinds are bred in stagnated Water about July. The *Boat-Flies*, as they call them, and several other Kinds of *Water-Insects*, all have their respective Plants to feed on, and breed upon them (so far as I yet find) somewhat after the Manner of Land *Insects*: It would take too much time to relate the several Particularities found in some of them, contrary to other living Creatures, or to describe their several various Forms, which would be of little Use to my present Purpose; I shall therefore now submit these Observations concerning *Blights* to the Censure of my Reader, and conclude with that curious Letter relating to *Plagues* and other Epidemical Distempers.

To Mr. BRADLEY, &c.

S I R,

UPON discoursing with you some time since about *Blights* upon *Trees*, you seem'd to be of Opinion that they were the Effect of *Insects* brought in vast Armies by the *Easterly Winds*, and by lodging upon the *Plants* proper for their *Nourishment*, they there produced that *Distemper* which is call'd a *Blight* or *Blast*.

You was then desirous of what Observations I had made concerning *Pestilential Distempers* subject to Mankind, which I believ'd to proceed from the same Cause that produced *Blights*, i. e. from *Insects*; I have therefore, in answer to your Request, endeavour'd to recollect what I have from time to time observ'd relating to that Case.

To pretend to give a natural Reason for *Plagues* or *Pestilences* that happen in the World, may be thought by some to enter too far into the Secrets of the *Almighty*. *Plagues*, as commonly argued, proceeding from, or being the immediate *Finger of God*, without the Concur-

rence of *Nature*; that they are sent down from him immediately for the Punishment of sinful Nations, as in several Cases mention'd in *Holy Writ*; and doubtless such Judgments on Criminals, must have often been, and may yet be, to the End of the World.

But however the All-wise *God*, it may be said, seldom in any thing acts contrary to those Laws of *Nature* which he has instituted, rarely working by Violence what may be done by natural Means: So that in this Case, setting aside Miracles, and what the *Almighty* can do, if he pleaseth, by his own Power, my Endeavours will be to find out by what natural Means *Providence* may work to bring that terrible Judgment of *Plague* or *Pestilence* upon any Country.

It is the common receiv'd Opinion, that the *Plague* proceeds from an Infection in the Air, and so undoubtedly it does; but then it will be ask'd, why the Air is not at all times thus infected?

Some will have it from *Steams* or *Vapours* arising from some *poisonous Minerals* at certain bad Seasons, which being by us taken into our Bodies with the Air, ferments and corrupts the Humours of the Blood, and our most delicate Parts, and at length extinguisheth that vital Fire in which our Life consists.

But this can hardly be the true Cause, since few *Minerals* have such mortal *Steams* constantly issuing from them; but at some times only, unless it be in the *Grotto del Cane* at *Baia* near *Naples*, and some other Places of the like Kind.

This *Grotto* is a Hole dug into a Bank near the *Lake d'Averna*, whose Water is warm, continually bubbling or boiling up; this *Lake* is cover'd with a Green Scum, and never freezes, lying not far from the famous *Sulfo Terra*, where much *Brimstone* is made, and where *Smoke* issues out of the Ground in many Places. The Entrance of the *Grotto* is hardly wider than a common Door, and not high enough to admit a tall Man without stooping, growing narrower towards a Point, a few Yards distant from the Mouth; at the Bottom 'tis very wet, almost standing Water, with Stones lying in it,
and

and the Sides are also moist about a Foot or two in a strait Line above the Bottom, which is as high as the *Steam* rises, and is known by putting in a lighted Torch into the *Grotto*, and lowering it by Degrees, 'till the Flame comes below the Top of the *Steam*, and then goes out. The Torch thus extinguish'd, the *Smoak* which is then below the *Steam* cannot rise above it, but slowly steals out of the Mouth of the *Grotto*, and then ascending is dispers'd: Nothing will burn in this *Steam*, nor any Creature either of the Land or Water live in it longer than it can hold its Breath; not even an *Insect*, as I have experienc'd.

I ventur'd to put my Mouth below the Surface of this suffocating *Steam*, and sucking in a little of it, I found it of a very strong Scent, somewhat like *Sal Armoniac*: It seem'd to me, after two or three Trials, that 'twas the most like sucking for Breath in a *Vacuum*, it wanted that Substance which we find in common Air, and is so necessary to maintain Life in any Creature.

The common Trial shewn to Strangers, is to tie the Legs of a Dog, and lay him on the Ground where this *Steam* rises; he immediately falls into *Convulsions*, sets his Eyes, and struggles in the same Manner as I have seen Creatures do in the *Air-Pump* when the Air is exhausted. The Dog, when he is void of Motion, is quickly drawn out of the *Grotto*, some few Paces to the Side of the *Lake*, and his Nose and Mouth thrust in and rubb'd in the Mud and Water, by which Means he soon begins to recover, and in a little time is so well, that he returns home with his Master.

The Man who shew'd us the *Grotto*, when he saw that I was going to put my Head into the *Steam*, protested against it; and when he could not prevail, went away; but I told him, if I suffer'd as the Dog had done, he should make use of the same Remedy, and recover me in like Manner; but I soon satisfied my Curiosity without receiving any Harm.

Somewhat like this, is what I suppose are call'd *Damps* in *Mines* in *Britain* and other Places, which come only at times, and are not lasting: These *Damps*, when they rise, will not suffer any Light to burn, and soon suffocate the Workmen and kill them, if they are not

presently drawn up into the open Air: No other Means has yet been discover'd to recover them after such Accidents, excepting a fresh *Turf* be cut and laid to their Mouths, which perhaps may be for the same Reason, that the Mud being apply'd to the Nose of the Dog, recovers him, after he is drawn out of the *Grotto*.

Upon the Town-Walls of *Leghorn*, and in other Places of *Tuscany*, they have Holes made like large *Ovens* for the Preservation of *Corn*; the *Conservatories* are brick'd within side, and coil'd round with *Wisps* or *Cables* of *Straw*; On their Tops, which are level with the Surface of the Earth, are placed large Stones, with a Hole cut in each of them, big enough to admit Men and Baskets to go down. These Places, when they are fill'd with *Corn*, are closely stopp'd with Stone-Covers, and Earth flung over them; but hither such *Corn* only is brought as is infested with *Weevels* or *Ferments*, beyond the Cure of turning them: When by the Help of this Method all living Creatures in it are destroy'd, and the most violent *Ferment* it can be subject to is stopp'd, the *Corn* is taken out and return'd to the Magazines. In *Sicily*, *Barbary*, and I think in all other hot Countries, this is the only way made use of to preserve their *Corn* from spoiling by these Accidents, which it is never safe from after it is thrash'd 'till it is used; and I suppose these *Conservatories* would have the same Effect upon all other Seeds or Grain.

'Tis remarkable, that in and about *Genoua*, where vast Quantities of *Corn* are laid up, they have none of these Places for curing their distemper'd *Corn*, but are often constrain'd to send it to *Pisa* to be thus brought to it self, there being no Earth near *Genoua* that will produce that Effect.

In my time one of these *Conservatories* being empty was left open, where some *French-Men* were playing at *Bowls*, and one of the *Bowls* falling into it, one of the Company was let down with Ropes to fetch it up, but he was no sooner down but was suffocated to Death; and one of his Companions, who endeavour'd to get him out, was so sensibly touch'd with the noisome Vapour

of

of the Place, that before he could get half way he was forc'd to return; but this was accidental, and I suppose was somewhat like the *Damps* in *Mines*, which I have already taken notice of.

The poisonous *Vapours* I have here mention'd are plainly more destructive to Animal Life than any others that have been known, in that they act much quicker upon the Spirits of Animal Bodies, than those which are said to occasion the *Plague* or other *pestilential Distempers*: And there is this Difference likewise between them, that a Body poison'd by the first, will not communicate that Poison to another, as People infected by that *Vapour* which causeth the *Plague* are known to do; therefore I think it plain, that the most nauseous *Vapour* of it self will not cause any *Distemper* that is *Epidemical*.

It seems then that the *Plague* proceeds from some other Cause, and that I suppose to be *Insects* of that extraordinary smallness, that they are not to be discerned by the naked Eyes; they are so light that they float in the *Air*, and so are suck'd in with the Breath. Such *Insects* not being among us commonly, but only when they are either brought to us from some remote Place by the *Wind*, or hatch'd or nourish'd by some Intemperance of *Air*, or from poisonous *Vapours* rising from *Bogs*, *Ponds*, *Ditches*, or some such unwholesome Funds of stagnating Water.

These *Insects* are various, according to the Nature of the Water or Air they are bred in; their Eggs being first laid by some flying Animals, which are then hatch'd, and passing through the several Changes common to *Insects*, at length take Wing, and being drawn in with the Breath, may perhaps be either kill'd in our Bodies, and cause a violent Ferment in the *Juices*, or else finding proper Nourishment, they breed in the *Lungs*, *Stomach*; or other Parts within us, and probably may occasion those Biles and Breakings-out in the tender Parts of the Body that are call'd *Plague-Sores*.

But those *Insects* are some of them so extreamly small, that they are only capable of being discern'd with good

Microscopes; and when they are wing'd, and so quite perfected, may perhaps in Swarms be carried from one Countrey to another by the Wind: It is *Insects* of several Kinds and Colours, which causes the Surface of Waters to appear sometimes *Green*, *Red*, or *Black*; which last Colour in Water is observ'd by the Herdsmen to poison the Cattle that drink of it; and they say causeth the *Murrain*, which is the *Plague* in Cattle, and is very infectious.

It has been observ'd that *Plagues*, and the most contagious *Distempers*, have commonly happen'd in those Years when the *Easterly Winds* have more than ordinary prevail'd in the *Spring* and *Summer Seasons*; then the Air comes to be infected, and rarely or never at other times. These *Winds* we see bring *Caterpillars*, and many differing *Insects* and *Flies*, which meeting with Places fitly adapted to nourish them, they are there brought to their winged State, which I conceive is the same in the Invisible Animals as in the Visible; nor indeed is any Part of the Earth, or Waters, and it may be the pure Air it self, free from the *Seeds* of Life: Nothing is out of Motion, or can be void of it, setting forth the Glory and Infinite Power and Wisdom of the *Creator*, from whence these infinite Productions proceed; some for one Use, some for another: What we call the Bad, are those which at unseasonable times invade by Swarms the Bodies of living Creatures, to whom they are destructive, and causeth the *Murrain*, *Rot*, and such like mortal Diseases.

Again, that the *Plague* proceeds from living Creatures brought by the *Easterly Winds* seems probable; for that such *Pestilences* are most malignant in the *Summer*, after the *East-Winds* of the Spring have blown, which passing over the greatest Continent of the Earth bring these *Insects* with it; but the contrary Effect has the *West-Winds*, which come to us over the vast *Atlantick Ocean*, attended with great Rains. These last *Winds* cure the *Plague* (it may be) by carrying back the Remainder of those *pestiferous Insects* which yet survive, to the Country from whence they came; and *Frost* and

Snow

Snow
them,
they m
Winds,
Temp

I ha
East-W
fection
Distem
ces on
ing a
the m
dance
Places
certain
try to

Dis
p. 28

" wh
" gio
" 40
" Fr
" ca
" rat
" ne
"

" re
" in
" ft
" th
" o
" an
" th
" F
" fo
" c
" v
" b
" s
" c

Snow likewise stops the Infection perhaps by killing them, or laying them to sleep 'till the next Season, when they may either be brought back again by the *Easterly Winds*, or be enliven'd, or fresh Swarms hatch'd by the Temperature of *Air* suitable to them.

I have not yet found that any Winds, except the *East-Winds*, such as pass over *Tartary*, bring any Infection with them, nor have I ever heard of *Pestilential Distempers* in any Part of the World, unless in such Places only where the *Tartarian Winds* reach; *Tartary* being a Country full of Woods, Bogs, and Fens, it seems the most capable of producing these Creatures in abundance, which may be carry'd by the *Wind* to certain Places in search after their Food, as are *Locusts* and some certain *Birds*, which are known to pass from one Country to another.

Diodorus Siculus, in his historical Library, Book XII. p. 286. saith, "The *Plague* broke out afresh in *Athens*, "when they had been but lately freed from that *Contagion*: It raged with that Violence, that they lost "4000 Foot-Soldiers, and 400 Horse; and of others, "Freemen and Servants, above 10000. And now, because the Course of the History may require a Declaration of the Causes of this violent *Distemper*, it is "necessary in this place to set them forth.

"Abundance of Rain had fallen in the *Winter*, by "reason whereof the Earth being over wet (especially "in low and hollow Grounds) the Water lay in the "standing Pools, which corrupting and putrifying by "the Heat of the *Summer*, thence proceeded a Mist "of gross stinking *Vapour*, which corrupted the *Air*; "and besides, the Want of good Food much advanced "the Progress of the Disease; for the Year before, the "*Fruits*, by too much Rain, were crude and unwholesome.

"There was likewise a third Cause of this *Distemper*, "which was this: The *Etesian Winds* (which I take to "be the *Maistrali*, or North-west Winds) blew not this "*Summer*, by whose gentle Breezes the violent Heat "of the *Air* was used to be allay'd at other times; so "that

“ that the Heat being now more excessive, and the Air
 “ as it were inflam’d, Mens Bodies wanting the usual
 “ Refreshment, contracted an evil Habit, from whence
 “ arose *Burning Distempers*; and thence it was that
 “ many seized with this Disease cast themselves into
 “ *Pits and Wells.*”

I was not in *England* in 1666, when the *Plague* rag-
 ed in *London*; but I have heard from some of those that
 then were in the City, that the *Summer* was so dry,
 that hardly any Rains fell until *November*, which
 Drought must be occasion’d by an unusual Frequency
 of *Easterly Winds*.

Experience shews us how much *Insects* delight in
 stinking Places, and that they increase much faster in
 uncleanly Cities, such as *London* was formerly, than in
 cleaner Places; but the City of *London* having been for
 the most part burnt the Year after the *Pestilence*, its
 Streets were enlarg’d, many Drains were made, and
 good Laws put in Execution for keeping the City
 clean, and it has not had any *Plague* ever since.

It is remarkable, that when the *Plague* reign’d in *Lon-
 don*, *Buckler’s-bury*, which stood in the very Heart of
 the City, was free from that *Distemper*; the Reason
 given for it is, that it was chiefly inhabited by *Drug-
 gists* and *Apothecaries*, the Scent of whose Druggs kept
 away the *Infection*; which according to my Notion
 were so unnatural to the pestilential *Insects*, that they
 were kill’d or driven away by the strong Smell of some
 sort of Druggs: The Smell of *Rhue*, and the Smoak of
Tobacco, were prescrib’d as Remedies against the *In-
 fection*, but especially *Tar* and *Pitch-Barrels*; and I have
 been inform’d by a Person of Credit, that the People of
Lime-House were not affected by it, nor some of the
Docks, perhaps for the same Reason; so also the Use of
Sea-Coal may now be one means to prevent the *Plague*
 in *London*.

The People of *Leghorn* observe, that at the End of
 every eighteen Years they are subject to an *Epidemical
 Distemper*; which if it be not the *Plague* is hardly to be
 distinguish’d from it. I was there in two of those
 Years;

Years
 much
 ning
 were
 termin
 lus d
 Plagu
 strali
 are t
 Wor
 or T
 and l
 the S
 and t
 T
 the
 Win
 the
 habi
 Salt
 ditie
 T
 Sho
 com
 whi
 fom
 of a
 So
 and
 to
 Mo
 from
 Ter
 Pe
 bar
 &c
 fir
 se
 ref

Years; the Second was in the Year 1685, and was much worse than the First: It began about the Beginning of *Summer*, with frequent *Easterly Winds* (such as were not usual) continuing to blow almost without Intermission 'till towards *Winter*; much as *Diodorus Siculus* describes the Year to have been when the Great *Plague* was at *Athens*: We wanted that *Summer* our *Maisralli*, or *North-West Winds*, as we us'd to have, which are the *Trade-Winds* in all the hot Countries of the World following the Course of the *Sun*: About Nine or Ten in the Morning these Winds begin to blow, and last 'till Sun-set, when soon follow the Winds from the Shore, which blow 'till the next Day about Nine, and then the *Trade-Wind* re-takes its Course.

The first *Infection* began in Houses near the Walls of the Town to the Landward, from whence the *East-Wind* blew, and by degrees crept towards the *Sea*; but the *Infection* did not touch such Places which were inhabited by *Merchants* and *Shop-Keepers*, who dealt in *Salt* and *pickled Fish*, *Pitch*, *Tar*, and such like Commodities.

To the *Northward* of the Town, towards the *Sea-Shore*, lay very boggy stinking Ground: These *Marshes* commonly about Autumn cause *Agues* and *Feavers*, which may be from vast Swarms of invisible unwholesome *Insects*, which rise from thence at that Season, but of a different *Poison* from those which cause the *Plague*: So the like Places about *Civita Vecchia*, *Scanderoon*, and I may mention the *Isle* of *Sheppy* likewise, seem to cause *Agues*. And it is observable, that from the Mouth of the River *Magra*, which divides *Tuscany* from *Liguria*, along the *Sea-Coast* of *Italy*, as far as *Terracina*, is very unhealthy and subject to *Agues* and *Pestilential Feavers*, being *Marshy Ground*.

We may also observe, that in *Turkey*, *Egypt* and *Barbary*, when the *Plague* rages, the *Franks*, the *English*, &c. are seldom infected with it, which seems to confirm my Opinion, that this Sickness proceeds from *Insects*, who having their certain natural Nourishments respectively appointed them, do not in those Places infect Strangers,

Strangers, who have differing Ways of eating and living from the Natives, and are of a contrary Nature of Body. It would be well worth enquiry, if the People of those Nations, that were in strange Countries in the Times of *Pestilence*, were also free from *Infection*.

King *Charles* the II^d, when he was told of the Sickness at *Leghorn*, said, it must have been occasion'd by the *New Fortifications* which were then building in those Marshy Places : And it is very rational to believe, that turning up those unwholsome *Muds*, and exposing them to the *Sun*, did much increase the *Distemper*, by infecting the *Air*, and filling it with greater Supplies of poisonous *Insects*.

I cannot help taking notice likewise of the raging *Distemper* which was among the *Cows* about *London* two Years ago ; it was so violent and infectious, that if one had it, all others that came within Scent of her, or even eat where she grazed, were surely infected ; it seized their *Heads*, and was attended with running at the *Nose*, and a very nauseous *Breath*, which kill'd them in three or four Days. The *Herdsmen* would not allow it to be the *Murrain*, nor could give any Account from whence it did proceed, or could find out any Remedy against it ; they only tell us the unusual dry *Summer*, and the continued *East-Winds*, were the occasion of it. This *Distemper* had been for two or three Years before it came to us, in *Lombardy*, *Holland* and *Hamburgh*, to the Loss almost of all their *Cattle*. The *States* of *Holland* caused a *Medicine* to be publish'd for the Good of those who had their *Cattle* thus distemper'd, but having been try'd here, 'twould not cure One in Seven, but rather increased the *Infection* by keeping the distemper'd *Cattle* longer alive (by some Days) than they would have been without it. 'Tis remarkable, that no *Oxen* had this *Distemper*, but only *Milch-Cows*, which were more tender than the *Males*. The *Herdsmen*, to keep their *Cattle* from the *Infection*, let them bleed in the *Tail*, and rubb'd their *Noses* and *Chaps* with *Tar* ; and when any happen'd to die of it, they were burnt and buried deep under Ground. It began at *Islington*, spreading

spreading
Essex,
as two

The
this D
by dri
'tis p
bred ;
ed alm
most l
stroy'
use) v
great
their

Th
States
Drug
made
whic
strong
tick C
Tar,
all o
servi
Ingr
or d
such
from
are
derg

It
incr
Wo
Van
hov
the
som
Boo
the
if t

spreading it self over many Places in *Middlesex* and in *Essex*, but did not reach so far *Westward* from *London* as twenty Miles.

The most general Opinion concerning the Cause of this *Distemper* was, that the *Cattle* were first infected by drinking some unwholsome standing Water, where 'tis probable some poisonous *Insects* were lodged and bred; the *Summer* having been extreamly dry, attended almost constantly with *Easterly Winds*, the Grass almost burnt up, and the Herbs of the Gardens almost destroy'd by *Insects*; but such as they were (unfit for Table use) were given to the *Cattle*. There was likewise so great want of *Water*, that many were forced to drive their *Cows* five or six Miles to it.

The *Electuary*, publish'd upon this Occasion by the *States of Holland*, was compos'd of most, if not all, the *Druggs* used in the most serviceable *Medicines* that were made use of against the *Plague* among Men; most of which Ingredients we know to be mortal to *Insects*, as strong-scented Roots and Herbs; but above all *Aromatick Gums* and *Saps* of *Plants*; as *Rhue*, *Garlick*, *Pitch*, *Tar*, *Frankincense*, and *Olibanum*; but I believe, before all others, Extractions from the *Cedar*, nothing preserving Bodies from Worms better than that. These Ingredients are much used in *France* and *Italy* to prevent or destroy Infection, by burning them and smoaking such Bodies. Letters, or any other things as are brought from infected Places, after they have made *Quarantine*, are not suffer'd to come on Shore 'till they have undergone this Operation.

It is not against Experience, that *Insects* can live and increase in Animal Bodies: How often do we find Men, Women and Children, troubled with *Worms*? What Varieties of those *Insects* are often voided by them? And how should that be, if they were not either suck'd into the Stomach with the Breath, or taken into it with some unwholsome Food? For they cannot breed in such Bodies from nothing, without either their Eggs or themselves are brought thither by some Accident: For if they were the natural Produce of Animal Bodies, they would

would then be alike common to all, which we know they are not.

I have been inform'd, that in the Year 1714, when this *Mortality* among the *Cows* was at its height, that towards the End of the *Summer* some Farmers brought in fresh Cattle, and turning them into the same Fields, where many *Cows* had died before, they took the Infection and died likewise; but the following Spring those Fields were void of Infection, and the *Cows* that were put into them did very well; but what were then put into the *Cow-Houses*, where the sick *Cows* had been the Year before, were seiz'd with the *Distemper* and died, which seems to inform us, that it was the Effect of *Insects*, which thro' the Warmth of those Stalls were preserv'd from the Severity of the *Winter's* Frosts; but such as were left in the open Fields, were destroy'd by the Cold. I have heard that a Woman about *Camberwell* cured six in seven of her *Cows*, by giving them once a Week an Infusion of *Rhue* and *Ale-wort*.

But it may be ask'd, why these infectious *Distempers*, subject to *Men*, *Cattle* and *Plants*, are not universal? And why the *Plague* should not be as well in *India*, *China*, the South Parts of *Africa* and *America*, as in these Parts of the World? (For I do not find it has ever been in those Places.) This *Query* gives me a farther Opportunity to suggest, that *Insects* are the Cause of it, and that they are brought with the *Easterly Winds*. In the first place, so far as I can learn, there is not naturally in *America* any one Kind of Creature or *Insect* that is found in any other Part of the World, and the *Plants* likewise are all different from those of other Countries; also it is the same in *India*, *China*, &c. whose Products are quite different from what we find elsewhere. Supposing then that these pestiferous *Insects* are only the Produce of *Tartary*, let us consider to what Parts of the World they may be carry'd from thence with the *Easterly Winds*; and whether *India*, *China*, the South of *Africa* and *America*, are not beyond their reach, or can reasonably be affected by them.

Whoever

Whoever considers the Disposition of the Land and Water in the Globe, may thus account for the Passage of these *Insects*, with an *Easterly Wind* from *Tartary*, to all the Parts of *Europe*, *Asia-Minor*, *Palestine*, *Barbary*, and other *South Coasts* of the *Mediterranean Sea*, whither, 'tis highly probable, they may come, without meeting any thing in their way to obstruct their Course.

The best Maps do not lay down any *Mountains* of Note between *Tartary* and the places which have been subject to the *Plague*: The *Alps* run parallel with the Winds coming from *Tartary*, and therefore does not any way hinder their Passage: The *Mountains* of *Dalmatia* are not high enough to prevent the Passage; or if they were, the *Caspian Sea* is sufficiently large to let them pass to the *South Parts* of *Europe*, the *Mediterranean Sea*, and the *North Coasts* of *Africa*, even to their most *Western Bounds*.

Now it may be expected perhaps, by some, that these *Winds* should yet continue their Progress as far as *America*; but as yet, so far as I can learn, these *Land Winds*, when they have blown with the greatest Force, and have been of the longest Continuance, have not reach'd farther than about three hundred Leagues beyond the *Western Coasts* of *Europe*, which is a trifle in comparison of the vast *Ocean* between *Us* and *America*: Besides, it is my Opinion, that the Winds which blow over so vast a Tract of Land, as these *Tartarian Winds* must do, that I suppose convey and support the pestiferous *Insects*, are of so different a Nature from the *Winds* coming from the *Ocean*, that 'tis likely those Creatures which would subsist in the one, would be destroy'd by the other: So that if I am right in this Conjecture, *America* cannot be subject to the *Plague*.

Mount-Atlas, which is a vast Ridge of *Mountains*, running from the *Ocean* almost as far as *Egypt*, and are back'd with the *Desarts* of *Libya*, may very likely obstruct the Passage of these *Insects* to the *South* of *Africa*; and for that Reason perhaps, secure that Part of the World from *Plagues*. So likewise *Mount-Caucasus*, or *Ararat*, which is one of the highest Ridges of *Mountains* in

in the World, running from *East* to *West*, thro' *Persia* and *India*, may secure the *South* Parts of those Countries from the *Plague*, by stopping the Passage of those infectious Creatures, if any *Winds* from *Tartary* should happen to blow them that Way : And as *China* lies to the *East* of *Tartary*, so it must be *Westerly Winds* which must infect that Country with the *Plague*, if it proceeds from what I imagine : But we do not yet find that *Westerly Winds* are frequent in those Parts ; or if they are, we may be assured they cannot blow at the same time when the *Insects* are hatch'd and carry'd the contrary Way by the Wind from *Tartary*. We are inform'd, that upon the Coast of *China* the Winds are so regular, that from *October* to *March* they continually blow from the *North-East*, and from that Month to *October* the direct contrary Way.

I have now given you what Observations I have made concerning pettilential *Distempers*, which I think may, in some measure, serve to confirm your Notion of *Blights*.

I am Your, &c.

ROBERT BALL.



OF



OF THE Kitchen Garden.

CHAP. I.

Of the *HOT BED*.



Hot Bed is the common Help made use of by Gardeners to forward the Growth of a Plant, and force Vegetation, when the Season of it self is not warm enough. By this Means (if it be managed with Skill) the hottest Climate of the World may be so nearly imitated, that Seeds of Plants brought from any Country between the *Tropics* may be made to flourish: In a Word, it is both curious and useful.

In order therefore to have a right Understanding of the *Hot Bed*, let us consider what Degree of Heat is required for the Growth of *Plants* we are to raise upon it; for Nature must be imitated as near as possible, and not forced or exceeded, if we hope for Success in our Undertaking.

Heat and *Moisture* are certainly the Rudiments of Vegetation; and therefore whoever would promote the Growth of a *Plant*, must contrive how to have them both in such due Proportion, as that neither one nor the other exceeds those Limits which Nature has allotted for the Growth of *Plants*. A dry *Heat* we find rather scorches and shrinks a Plant than makes it grow; and Wet, if it is not quickly exhaled from the Root of

a Plant, chills it, and often injures it past Recovery. A moderate sweating *Heat* therefore is the most desirable, such as is rais'd by the Ferment of wet *Straw* or *Horse-Litter*, which for a time will send forth from the Earth lying upon it, that gentle *Steam*, impregnated with vegetative *Salts*, which we find contributes so much to the Growth of *Plants*, besides the putting those Juices into Motion which are lodg'd in the Root, and circulating them thro' the *Vessels* of the Plant.

The *Steam* which I suppose to rise from the *Root* into the *Wood-Vessels* of Plants to furnish them with *Sap*, Chap. I. Part I. of this Work, will indeed, of it self, keep a Plant alive; but then at the same time the *Bark*, *Leaves*, and other *Spongy* Parts of a Plant (which encompasses the *Sap-Vessels*) if they are over dry, will shrink and pinch those *Vessels* so very close, that they then cannot admit the *Sap* to circulate thro' them in such Quantity as is necessary to support the Plant in Vigour; on the contrary, when the *parenchymous* or *spongy parts* of Plants are kept moist by the *ascending Vapours*, which continually rise round about them from the *Earth*, then the *Sap-Vessels* are also more open, and at liberty to receive the Nourishment rising from the Roots.

To explain this, let us consider those Plants which are cultivated in Pots, and set singly in Chambers, and other places of the House for Ornament in the *Summer*; tho' we allow them large *Pots*, fresh *Earth*, and *Water* enough, and *Air*, as much as they have in a *Green-House*; how sensibly do they decline in a few Days, which happens only for want of that *Steam* which is always abroad (more or less) rising from the *Earth* in the Day, and condensing and falling upon them again at Night.

Nor can the Pots, set singly in a Chamber, have this help as those have which are set together for Shelter in the *Winter* in a *Green-House*; the number of Pots, in a Collection of Plants, affording *Steam* enough to nourish one another, which one single Pot must want.

The like is to be observ'd in a dry Season, when we are forced to water Plants that stand abroad; they are by that help but just kept alive, because the *Earth* round

about
at least
has fall
rise fro
make t
Groun
before
Sorts
where
A P
it can
it, as
when
pose,
must l
growi
not b
from t
to all
Dung
will h
well
rated
our A
below
H
lities
ceed
of H
bles
thou
Coal
State
abou
not
ther
Foo
leng
face
to n
about

about them is so dry that it hardly emits any *Steam*, or at least not enough to support them; but when Rain has fallen, we find a contrary Effect; the Vapours then rise from the Earth every where about the *Plants*, and make them flourish: So that I prefer the Floating of Grounds, for the Welfare of many Kinds of *Plants*, before simple Watering; but there are some particular Sorts which it would destroy, as I shall explain elsewhere.

A *Hot Bed* then appears to be of Use so long only as it can send out such *Vapour* from the Earth lying upon it, as is necessary for the Support of the *Plants*; and when it wants the *Heat* which is requir'd for that purpose, it must be renew'd; for else the Moisture, which must be maintain'd to nourish the Roots of the *Plants* growing in it, will chill and destroy them. I would not be supposed here to mean the *Steam* which arises from the *Dung* it self, for that is known to be destructive to all *Plants*; 'tis the *Vapour* only which the *Heat* of *Dung* evaporates from the Earth lying upon it, which will help the *Plants*, and that too must be temperate and well qualified, lest it scald them, which may be moderated according to our Desire, by laying the Earth upon our *Hot Bed* of a due Thickness, answerable to the *Heat* below it.

Having thus given my Opinion concerning the Qualities requir'd in a *Hot Bed*, I shall in the next place proceed to give proper Directions for making it. The *Dung* of *Horses* or *Asses*, such as is taken fresh out of the Stables or Stalls, is the most proper for our purpose; it should then be thrown up into a Heap, with a few Sea-Coal Ashes among it, and very well water'd. In this State, if the Quantity be very large, it should lie to heat about eight Days; but two or three Loads only need not lie above half that time before you use it. The Bed then must be mark'd out somewhat more than three Foot wide, answerable to the Size of your Frames; the length of it running from *East* to *West*, so that it may face the *Sun*. Some *Gardeners* dig a Trench a Spit deep to make the Beds in, and others save that Trouble, and

make it all above Ground; I have try'd both ways, and find so little difference, that I cannot say which is best: but I think if the Ground be wet and springy, it is most reasonable to make the *Bed* quite above Ground, lest the *Dung* be chill'd. In the spreading of the *Dung*, we must chiefly have regard to lay it equal in every Part, that when the *Bed* comes to settle, it may not lie uneven; and besides, that it may heat altogether: The whole must be trodden down from time to time, as fresh Litter is laid upon it, 'till at length the *Bed* is of the Substance you desire, which ought to be (in *Winter*) about three Foot high.

Having thus prepared your *Bed*, set on your Frames, and put the Earth you design for it upon the *Dung*, laying it ridg-wise, that it may be more conveniently turn'd over as you see occasion, if the *Bed* should burn. When you find the extream *Heat* begins to abate, level the Earth upon it, to sow what Seeds you design; minding always to have upon your *Bed* five or six Inches thick of Earth to prevent the extream *Heat* of the *Dung* from spoiling your Crop; and that the Roots of whatever you sow or plant, may always keep free from the *Dung*, which whether it be hot or cold spoils most Plants that touch it. In short, to see the working of two or three *Beds*, if a Man is careful to make Observation of them, will better inform him than any written Directions; for some *Beds* will heat sooner than others. And again, I have known one *Bed* out-last three in its *Heat*, which depends partly upon the Nature of the *Dung* it is made of, and also in the true Method of working it. The Frames which cover these *Beds* likewise, contribute greatly to the maintaining the *Heat* in them. A large Frame requires a greater *Heat* to warm the *Air* it encloses than a small one: So if two *Beds* were made equally (as possible) of the same Strength; the one cover'd with a large Frame, and the other with a less; that with the large Frame would sooner cool than the other, and perhaps preserve a Plant, when those under a smaller Frame would burn: And the too frequent opening of a *Bed* likewise contributes to cool it much sooner

sooner than it would otherwise be. In a word, rather desire such *Heat* only in your *Hot Bed*, as will suffice to keep out the Frost, than covet to make your Plants grow quick.

But as it is not suppos'd that any *Hot Bed*, without some Help, can maintain its *Heat* long enough to bring what we plant upon it to Perfection; so it is commonly practis'd, when it begins to cool, to cut away the Sides of it slope-wise, and laying fresh *Dung* to them, it recovers its lost *Heat*, which is call'd *Backing* or *Lining* of a *Bed*; and this Work the skilful *Gardeners* will repeat sometimes five or six times in a Season, as they see occasion, rather than make fresh *Beds*.

If a sufficient Quantity of *Dung* fresh from the *Stable* cannot be easily compass'd, we yet need not be destitute of a *Hot Bed*; some *Horse-Litter* already cold; *Straw* steep'd in *Pond-Water* two or three Days; *Grass*, *Coal-Ashes*; and, if they can be had, the *Grains* of *Malt* after *Brewing*, or damaged *Bran* made very wet; if they are thrown together in a Heap, and well water'd, will ferment and heat as well as any *Dung* we can desire.

It remains now only that I give Directions for composing of *Earth* proper for our *Hot Bed*, which should always be light, fresh, and well sifted, considering how tender the *Roots* will be of those things which are to grow in it. Take therefore of fresh sandy *Loam* one half, and add to it an equal Part of *Horse-Dung* well rotted; let these lie in a Heap together well mix'd, to be screen'd or sifted when it is wanted: Rotted *Leaves*, well consum'd, are also good, if *Dung* is wanting.

C H A P. II.

Of MELONS, CUCUMBERS and MUSHROOMS,
their Culture.

HAVING in the foregoing Chapter given the necessary Directions for preparing a *Hot Bed*, I shall now proceed to offer some Observations and Experiments I have made in the Culture of *Cucumbers* and *Melons*: And first concerning the raising the Plants for the General or *Summer Crop*, for 'tis that we must depend upon for a Quantity of Fruit. Towards the beginning of *March* is time enough to put in the Seeds of *Melons*, which we design for *Ridge Plants*; those, if the Bed be moderately warm, and in good temper, will come up and be fit to plant out four Inches a-part about a Week after sowing; they may thus remain 'till their first Leaf is about the bigness of a Crown-piece; and then, when the second or third Joint appears, cut off the prime Leader from each Plant, near the *Ear-Leaves* or *Lobes*, and they will each of them quickly put out three other *Runners*, which will produce Fruit plentifully; and those also are commonly prun'd at every third or fourth Joint when they come to run; this is the common way.

About the latter End of *April*, or the first Week in *May*, the *Melon* Plants, thus rais'd, will be fit to plant upon *Ridges*, which should be made thus: Cut a Trench about two Foot and half wide, and sixteen Inches deep, in which lay of Horse-Litter, prepar'd as I have directed for the *Hot Bed*, about two Foot thick, which will raise it somewhat above the Surface of the Ground: In this Work take care to spread the Dung equally, and tread it over gently to settle it; then at the distance of about four Foot in the middle Line of the Ridge, make Holes about ten Inches over, and about six Inches deep, and fill them with the prepared Earth: After this cover the whole with the same Soil, about five Inches thick, and make them into flat Beds four Foot wide, for the *Vines* to run upon.

About

About two or three Days after the Ridges are thus prepar'd, plant two *Melon Plants* in each Hole, sprinkling them with Water (that has been warmed in the Sun) and covering them with Square or Bell Glasses; immediately upon which, either Mats or Straw should be put to keep the *Plants* from withering by the Sun's Heat, 'till they have struck Root; and so likewise should *Cucumber Plants* be ordered, if they are planted out upon Ridges at this time of the Year, but they require no pruning.

About the latter End of *May*, or a Fortnight after planting, they will be in a growing Posture; and then if the *Easterly dry Winds* are ceas'd, tilt up the Glasses about an Inch in the Heat of the Day, to give them Air for two or three Hours, that by degrees they may be harden'd to the Weather. It is now I cannot help taking notice of two or three things practis'd by the *Gardeners* in the Culture of *Melons* and *Cucumbers*; which altho' they may perchance be generally practis'd, yet I am sure they deviate from the Laws of Nature; and Experience has shewn me, that their Work in those Points is needless, and might better be avoided. In the first place, when a *Melon* or *Cucumber Plant* is in Blossom, it is customary for them to pull off all the false Blossoms, which they say would weaken the Plant; but if those are the Male Flowers, as they seem to be, it is them that are ordained by Nature to set the Fruit, (which I think I have already explain'd.) In the next place it is a common Practice to lay the several Leaders of the *Vines* at equal Distances from one another, and often lift them up to view the young Fruit, which is very hurtful; for that the Vessels which convey the Juices to the Fruit are very tender, and subject to be bruised by the least bending from their Place of natural Growth. But yet more than this, I have seen a Bed of *Melon Plants*, which an Ingenious Professor of *Gardening* has prun'd and laid in order (as he call'd it) with great Dexterity, and had no false Blossoms left upon them, that have from time to time offer'd abundance of *Fruit Blossoms*; and by being frequently handled and disturb'd,

sturb'd, have not set one Fruit ; while on the other Hand two other *Plants* of *Melons*, which were sown later, by a Month or more, and had been disregarded, surpriz'd him with several large Fruit, when he hardly expected to find them in Blossom : And so in the *Vines*, for forward *Cucumbers*, the Fruit that sets first seldom comes to Perfection, because upon all Occasions the *Vine* is taken up to look how it comes forward ; but in the most remote Corner of the *Bed*, where the *Plants* are the least regarded, commonly comes the first perfect Fruit. And lastly, I find another Practice too frequent, which I account as unreasonable as the others, and that is, the exposing a young set Fruit to the *Sun*, by taking away the Leaves from about it. A Gardener of small Experience may know that Fruit of any Sort grows best in the Shade, and that the immediate Heat of the *Sun* is only necessary for the Ripening of Fruit, and not for the Growth of it ; for the *Sun-Beams* falling directly upon a *Plant* dries and pinches the *Vessels* of it ; so that the *Sap* wanting a free Passage, it is impossible it can fill the *Plant* so quickly and plentifully, as it would do if the Parts were larger and more open, such as they are always in the Shade ; and that this is Truth, I appeal to common Experience, whether Fruit growing in the Shade, is not larger than the same Kind growing in the full *Sun*.

In *Spain*, *Portugal*, and the *South* Parts of *France*, the *Melon* Gardens are seldom regarded after they are sown, 'till the Fruit begins to ripen. And I have been inform'd by some Inhabitants of those Places, that they never fail of good and large Fruit in great Quantity, altho' they give them no other Dressing than what is necessary to prepare the Ground for the Reception of the Seeds,

It was the Opinion of some of the Ancients, that Women should not always be suffer'd to come among Plants, for that at certain Periods the very Approach of a Female was pernicious and destructive to them ; but that Notion, with many others of the like Nature, have long since been destroy'd by Experience to the

contrary,

contrary
want o

But
then co
pening
experie
now an
do not
Fruit
But C
will m
Melon
enough
two J
ted fo
into t
contr
ed w
durin
fully
much
thro'
be k
where

For
Flav
near
happ
of t
will
Reli
pens
Cha

D
run
gen
and
as f
tha
two

contrary, and seems only to have been maintain'd for want of better Judgment.

But now supposing our *Melons* are fully set, we may then count about forty Days to the Time of their ripening, which I think is observ'd as a Rule among most experienc'd *Gardeners*: Give them gentle Waterings now and then, if the Earth be extream dry; for *Melons* do not delight in abundance of wet, neither will the *Fruit* be well tasted if the *Plants* are kept too moist. But *Cucumbers* love frequent Refreshings of Water, and will not prosper without it. Upon the Setting of a *Melon* it is commonly practis'd, and with good Reason enough, to pinch or prune off the running Branches two Joints above the *Fruit*; so that all the *Sap*, appointed for the Nourishment of that Branch, may be turn'd into the young *Fruit* for its Nourishment. This may contribute to make the *Fruit* large, if it be well guarded with *Leaves* from the scorching Rays of the *Sun*, during the Time of its Growth; But as soon as it is fully compleated, then indeed it cannot well be too much expos'd to the *Sun's* Heat, even to receive it thro' a *Glass*, which will forward its ripening, as may be known by the agreeable Odour it will send forth when it is fit for the Table.

For the more certain producing of *Melons* of a right Flavour, let me advise that no *Cucumber Plants* be set near them, lest the *Male Dust* of the *Cucumbers* should happen to be carry'd with the *Wind* upon the *Blossoms* of the *Melons*, and perhaps set them for *Fruit*, which will then certainly give the *Melons*, so produced, the Relish of the *Cucumber* in Proportion as the *Farina* happens to fall in greater or lesser Quantity. See Part I. Chap. II. *Of the Generation of Plants*.

During the Growth of the *Vines*, the Earth they run upon should be carefully kept weeded and stirr'd gently on the Surface; for the *Roots* both of *Melons* and *Cucumbers* are tender, and always shoot out in length as far as the Branches reach: But some indeed more than others, are subject to run into *Vine*, and that for two Reasons: First, All *Plants*, either of *Melons* or *Cucumbers*,

cumbers, as their Fruit is greater or smaller, produce *Vines* of greater Size, or lesser Proportion. I have known *Vines* of large *Melons* that would shoot (if they were left at liberty) about six Foot in a *Summer*, and the small Sorts have not grown two Foot; and so in *Cucumbers*, one Root of the large *Turkey Kind* has produced as much *Vine* as four or five Roots of the short prickly *Cucumber*, which ought to be consider'd when we plant the *Ridges*; one *Plant* of a large Kind, if it thrive, will be enough for one Hole, when perhaps of smaller Sorts, three or four may be necessary for the same Purpose. But, 2dly, All fresh *Seeds* of *Melons* and *Cucumbers* will produce much larger *Vines* than those *Seeds* which have been kept several Years. New *Seed* is apt to draw such plenty of Nourishment, that it is seldom prolifick; for too hasty thriving is ever an Enemy to Breeding or Prolificity. So on the other Hand, when I have sown *Melon*, and *Cucumber-Seeds* of seven or eight Years old, the *Vines* have been close jointed, and more subject to produce Fruit.

The *Italians* have a *Melon* which is commonly ripe about *Christmas*, and esteem'd among them as a *Rarity*; some of the *Seeds* of it are now in several Gardens in *England*; but I know not whether every one is acquainted with the right Method of its Management, therefore shall venture to give my Advice concerning the raising and preserving that *Rarity* of the *Winter*: The *Seeds* should be sown towards the latter End of *April*, or in *May*, in a Bed moderately warm; and the *Plants*, when they are come up, be so ordered, that the Fruit should not come to its full Growth 'till the latter End of *September*, or middle of *October*; the natural Warmth of the *Summer*, without any Art, will be sufficient for that End, 'till the cold Evenings in *August* begin to approach; then it will be necessary to shelter both the *Plants* and *Fruit* from the *Frosts* and cold *Dews*, 'till you think your Fruit will grow no bigger; and in the Heat of the Day, strip the *Plants* of their *Leaves*: let the Sun then dry the *Stalks*, and pull them up by the Roots to hang up afterward in a *Green-House*;

or

or some such well-exposed Place, to dry more thoroughly; after which they may be tied up by the Stalks in a dry Room, or laid in Chests of Bran, or very dry Sand, to keep them from the *Winter Air* 'till *Christmas*; if they are not then ripe enough, wrap them in a Cloth, and lay them in a Horse-Dunghil for about Twenty-four Hours, which will ferment their *Juices*, and cause Ripeness, as I have heard, and am apt to believe.

But seeing that the Pride of the *Gardeners* about *London* chiefly consists in the Production of *Melons* and *Cucumbers* at times either before or after the natural Season, I shall also prescribe some Rules for the Raising and Cultivating them at those times; which I shall lay down in as plain Terms as possible.

Most of the *Gardeners* I am acquainted with make their *Seed-Bed* for these *Plants* in *January*, altho' sometimes the Ground is cover'd at that time with *Snow* near a Foot thick; but I must confess, I shall never follow that Method while I have any regard to the Ways of Nature: For is it reasonable to believe, that young *Plants*, tender as they must be when they are thus just forced out of the Ground, can be able to withstand the least *Air* from abroad, when *Frosts* and *Blasts* continually reign? And to preserve them without *Air* is as impossible: Therefore to go more reasonably to work, prepare a *Hot Bed* about four Foot square, and two Foot high, in the first Week of *October*, and sow the *Seeds* both of *Melons* and *Cucumbers* in it, when the Heat of it is moderated; a Week after they are come up, plant them four Inches apart on the same *Bed*, after having stirr'd the Earth very well: In this Month the Days are commonly warm, and in such Weather they ought to have as much *Air* as you can possibly give them; but the Nights are uncertain, and therefore the *Plants* must then be cover'd up close with the *Glasses* and *Mats* over them. In this first raising of the *Plants*, a skilful *Gardener* may make them as hardy as he pleases; for it is not his Business so much to draw or force them, as to strengthen them against *Winter*.

All *Annuals* are as naturally disposed to live from the Autumn to the Spring, if they are kept from flowering in the *Winter*, as they are commonly known to flourish in the *Summer* Months; and both *Cucumbers* and *Melons*, which are likewise of the *Annual* Race, might as well be kept the *Winter* as any other *Exotick Annual* whatsoever, if we would not let them blossom before *Christmas*. I have my self kept young *Plants* of *Amaranth*, and of the *Nasturtium Indicum*, which I sowed in Autumn, till the *Summer* following, only in a common *Green-House*; and I am persuaded *Cucumber Plants* might be preserv'd almost with as little Trouble. I am inform'd, that the last Year a *Gardener* sowed some *Cucumber-Seeds* as soon as he had gathered them, and cut Fruit from those *Plants* very early in *January*.

When the *Plants* are in the second Joint, I would advise that they be hither planted in small *Garden-Pots*, or *Baskets*, open on their Sides, made with *Oziers*, about ten Inches over the Top, and four Inches deep; so may we more easily remove them without Damage from one Bed to another, as the Severity of the Season may require: But I prefer the *Baskets* rather than the *Pots*; because when the *Plants* begin to run, the *Roots* are at full Liberty to find their way into the neighbouring Earth of the Bed they are to stand in, without transplanting, which might endanger them. In one of those *Baskets* may be planted about five or six *Plants*, lest any of them should go off; tho' it is reasonable to believe, that a *Plant*, which has had the Advantage of a gradual declining Season to harden it self in, will not be so subject to suffer by the Weather, or require so much Heat to maintain it, as those which make their first Appearance in the midst of Frost and Snow. In short, let the *Gardener* rather endeavour to defend them from the Weather, than to force them; as the Bed cools, let him line the Back and Front of it with fresh Dung; let the *Plants* receive as much Air and Sun as he can reasonably give them, and guard them well with Straw and Matts in the Night, and there is no doubt but he will have Fruit early enough; but I speak to the Inge-

nuous,

nuous,
not to
little.

I sha
two co
ral Gr
do tha
expose
with a
four F
in the
tled;
much
a Cro
Seeds.

W
the I
been
to be
they
with
and
Gro
who
ther
find
Hog
ferin
Swi
the
Kin
by
last
wit

uous, who may yet improve what I have said, and not to those who despise Learning because they know little.

I shall now conclude this Section with a Word or two concerning the raising of *Cucumbers* on the Natural Ground for Pickling; for this we have no more to do than chuse a Piece of Ground pretty rich, and well exposed to the Sun; and after having wrought it well with a Spade, make Holes in the Form of Balons, about four Foot distant from each other, and sow the Seeds in them the first Week in *May*, if the Weather be settled; put at least a Dozen Seeds in a Hole, for it is much better to have Plants to fling away, than to want a Crop, which often happens by being too covetous of Seeds.

SECT. III.

Of MUSHROOMS.

WHoever has been accustomed to eat *Mushrooms*, will certainly allow them to be one of the greatest Dainties the Earth affords, especially the *Morel*, *Truffle*, and *Champignon*; the two first have been found in but few Places in *England*; but I am apt to believe they are as plentiful with us as the other, if they were skilfully sought after; they are to be met with in the Woods; the *Morels* chiefly appear in *April*, and the *Truffle* about that Time may be dug out of the Ground, for they never appear above the Earth. Those who make it their Business in Foreign Countries to gather the *Truffles*, have only one way (as I can learn) to find out where they grow, and that is by the help of a Hog, who they lead in a String thro' the Woods, suffering him to root up the Earth as he goes along; for Swine being very voracious of them, discover them by their Smell, and turn them out of the Ground; of these Kinds I have not known any that have been propagated by Art, as the *Champignons* have been, which tho' this last kind is common enough in many Places in *England*, without any Culture, yet it turns to good Account to
raise

raise them in our Gardens, since the Trouble of doing it is not considerable, and their Use begins to be known. The true *Champignon* has its Flesh very white, first appearing like a Button, with a Footstalk adhering to it, the Chives within it are of a Flesh Colour, and as the Cap of it explains it self, those Chives become darker by Degrees, and are at length black: I have seen some of the Caps when they have been fully explain'd about six Inches over, and of a considerable Thickness. This kind is the only sort I can recommend for its Goodness among the *Cap-Mushrooms*, and then only when they are fresh and free from Worms, which are apt to breed in them, their Stalks especially, and such are not accounted wholesome. We commonly find this sort growing in rich Pasture-Grounds about the latter end of *July*, or in *August* and *September*, after Rains have fallen.

The Observations I have made concerning the natural Produce of *Mushrooms*, seem to discover that they are produced by some Putrifaction in the Earth, or in those Bodies they are apt to grow upon; we have not in *England* less than 100 different Kinds that I have observ'd, besides those very minute Sorts that can only be discern'd with the Microscope in the Moldiness of Fruit and Liquors, which last Kinds are so quick of Growth, that in less than twelve Hours time they are perfected; and shedding their Seeds, several Hundreds of the same Kinds immediately vegetate; whence it is that Moldiness so soon overspreads those Bodies it once infects.

The Rings of *Mushrooms*, which are often seen upon Downs, Plains, and Commons, are called by the Countrey-People *Fairies Dances*; these are not always of one Sort of *Mushroom*, but various, according to the Soil that produces them. It is observable, that the Grass is always much greener and ranker in the Line where those *Mushrooms* appear, than in other Places of the same Grounds, which I have often wonder'd at, as well as the exact Figure of a Circle they have represented. When I enquir'd into the Reason of this strange Production, I discover'd two Things worth Observation; the first was, that just under the Turf where the

Mushrooms

Mushrooms
Pismire
 that T
 made
 had flu
 those
 bute t
 ing up
 neath
 afterw
 alway
 ly Fir
 ty to
 Vigo
 Place
 it alv
 Bu
 and c
 ple,
 It is
 Com
 Thu
 half
 twer
 Gra
 that
 duc
 Con
 cau
 has
 war
 be
 fit
 it v
 Ga
 In
 Du
 Sh
 tw

Mushrooms were growing, was a Track or Path made by *Pismires*, which was not only hollow in many Places at that Time, but the very Covering of that Passage was made of Earth extremely fine, which those Creatures had flung up: The Fineness of the Earth wrought by those laborious Animals might very reasonably contribute to the extraordinary Vegetation of the Grass growing upon it, and the Hollowness of the Ground underneath might produce that Moldiness within it, which afterwards might be formed into *Mushrooms*; for it has always been my Opinion, that if Earth is made extremely Fine, and by that means the *Salts* of it more at liberty to act, whatever grows upon it will be much more Vigorous. Again, we find by Experience, that in such Places where the Ground lies hollow near the Surface, it always turns musty and moldy.

But 2dly, *Garden-Snails*, the large black *Dew-Snails*, and others without Shells, call'd *Slugs*, when they couple, always make choice of short Grass to creep upon: It is their manner, when they generate, to take a large Compass upon the Ground, and meet one another: Thus I have seen them creep into a Circle for more than half an Hour, going over the same Ground at least twenty times before they could join, leaving upon the Grass where they crept, a viscous shining Matter. So that it may be, that Slime, when it putrifies, may produce the *Mushrooms* we find growing in Circles upon Commons; and I am the more apt to believe it so, because I have more than once observ'd, that where a *Snail* has left such a Track upon the Grass, a few Days afterwards I have found *Mushrooms* to come up: But it must be observ'd, that such as come up in this manner are not fit to eat. However, I suppose from Hints of this kind it was, that the edible Kind was first propagated in the Garden.

It is practised in *France*, to dig a Trench five or six Inches deep in the Ground, and lay in it either the Dung of *Horses*, *Mules* or *Ass's*, Ridge-wise, in the Shape of an *Ass's* Back; then cover the Dung about two or three Inches thick with fresh Earth, such as is just

just taken from under a Turf, rather sandy than otherwise, and then cover the whole Bed either with Straw or dry Litter, as well to defend it from the Frost in the *Winter*, as from the scorching Heat of the *Summer's* Sun. The Bed being thus prepar'd, water it twice or three times a Week, without taking off the Covering of Straw, and in about two Months time the *Mushrooms* will begin to appear, and must then be cut as they come up, and not drawn up by the Root. These Beds may be made every Month to produce *Mushrooms* all the Year about.

The late Famous Mr. *Harrison* of *Henly* made *Mushroom-Beds* much after the same manner, only instead of Horse-Dung he made use of old Thatch, which he told me turn'd musty, and grew moldy much sooner than Horse-Dung, and would produce *Mushrooms* quicker, and in greater Plenty; but either way will do very well.

So I have likewise known the *Melon Ridges*, which have been made as I have directed, about Autumn to produce *Mushrooms*, especially if the Earth upon them has not been of any great Substance; and that Straw or Litter has been laid upon them, and frequently water'd.

It is said, that the Cuttings of the *White Poplar* or *Abele* about the Root, being steep'd in hot Water, well fermented with *Yeast*, will produce very good *Mushrooms* in a few Days: And it is likewise reported, that the loose Chips of the same Tree, being buried in a decay'd Hot Bed, will do the like.

About *Naples* there is a sort of Stone which produces good *Mushrooms*, if it be laid in a moist place, or well water'd.

CHAP. III.

Of ESCULENT ROOTS, or such as are proper for Table Use.



THE Roots which are commonly made use of for the Table are *Parsnips*, *Carrots*, *Turneps*, *Skirrets*, *Scorzonera*, *Beets*, *Raddishes*, *Horse-Raddish*, *Potatoes*, *Jerusalem-Artichoke*, *Onions* and *Leeks*, and their Kinds.

SECT.

SECT. I.

Of the *PARSNIP*.

TO begin with the *Parsnip*; it affords a large sweet *Root*, very nourishing, and of great Use in the *Winter*: This Plant delights in a rich Soil, where the *Root* of it will become very large, but should not be eaten 'till the Frosts have entered the Ground. The *Seeds* of it are sown in *March*, and will come up in about three Weeks time; when they have been above Ground about a Month, they must be hough'd, leaving the space of about five or six Inches between the Plants. A skilful Gardener will sow *Raddishes* among them, which in about forty Days may be drawn off; or sometimes *Spinage*, which will also be fit to cut before the *Parsnips* begin to spread. And indeed it is not the least part of a Gardener's Skill to understand how to double crop his Ground with such things as will not spoil one another. After the first houghing of the *Parsnips*, keep them as clean from *Weeds* as possible, 'till they are full grown, and then take them up and keep them in *Sand* for Use.

SECT. II.

Of the *CARROT*.

CARROTS delight in sandy Soil, where their *Roots* will grow to a great Bigness, and be much sweeter, and more free from Worms than those which are sown in rich Garden Ground. Sow those you design for *Winter* Use at the same time you sow *Parsnips*; and in the same Manner sling in among them *Raddish* and a few *Lettuce*; when they are come up, hough them as I have directed for the *Parsnips*, and take them up when they are full grown, to be kept in *Sand* for *Winter*. About *London* the Gardeners are curious to have young *Carrots* for the Spring, which they raise in the following Manner. Towards the End of *July* they prepare a Piece of Ground, and sow it when it is moist

PART. III.

G

likely

likely to rain; and about *Michaelmas* (if the Seeds be good) and the Weather has been favourable, the Roots will be somewhat larger than a Tobacco-Pipe, and the *March* following will be fit to draw for the Table; but this Crop must be soon gather'd, lest they run to Seed, which they will certainly do in *May*, and then they will not be fit to eat. But that there may not want some to succeed these, I have known an ingenious *Gardener* make a hot Bed in *February*, which he cover'd about six Inches thick with Earth, and sow'd it with *Raddish* and *Carrot-Seed*, covering it in bad Weather with Mats upon Hoops. The *Raddishes* will soon be fit to draw, and the *Carrots* be ready for the Table about *May*, when the Spring Crop is gone.

SECT. III.

Of the TURNIP.

TURNIPS have many Excellencies, and are more generally propagated about *London* than any other Root; they are a wholesome Diet, and are of extraordinary Use to the Farmer for feeding Cows and Sheep. This kind of Root is always sweeter in a sandy Soil than any other Ground, but will have larger Roots if the Land be somewhat inclinable to Loam. From the middle of *July* to the tenth of *August*, and not later, the Seeds may be put into the Ground, that the Roots may have time to apple (as they call it) before *Winter*. When the Plants have two or three Leaves a-piece, they should be hough'd at the Distance I prescrib'd for *Carrots* and *Parships*, and this Crop will be off time enough in the Spring either to sow *Barley*, or any other Grain or Seed on the same Spot. It is seldom practis'd, tho' I think it would be very acceptable, to provide *Turnips* for the *Summer*: And indeed I see no reason why we may not have them all the Year about: We may sow them in the Spring as well as at Autumn; but planting them out from Seeding-Plants in the Spring and Summer Months will do much better. I have more than once known the Experience of this way, and find it to answer as one would desire.

SECT.

SECT. IV.

Of the SKIRRET.

THE *Skirret* has a very agreeable Root, altho' it is propagated but in few *Gardens*; and it may be, the Rarity of it is owing to the want of the right way of cultivating it. We may propagate it two ways, either by sowing the Seeds in *March*, or by transplanting the *Off-sets* from the *Roots* in that Month: It delights in a light rich Soil, somewhat moist, which I find contributes to make the *Roots* large. About nine Years since a *Gardener* in *Surrey* sent to me for some Seeds of this *Plant*, and sow'd them in a black moory Soil, which had lately been a Plantation of *Asparagus*; in that Spot of Ground he had the largest *Skirrets* I ever saw, and very sweet; but about *London* 'tis more generally practis'd to raise them from Slips or Sets, which must be done thus: In *March*, when the Leaves begin to put forth, take them out of the Ground and part them into as many Slips as you can take off with *Roots*; but be sure let only the fresh springing *Fibres* remain on them, and not any of the old *Roots*; then prepare *Drills* about four or five Inches deep to plant them in, five or six Inches a-part, and keep them well water'd 'till their *Roots* are full grown; then take them fresh out of the Ground, as you have occasion to use them. Some say the *Roots* will be larger if they are not suffer'd to run to Seed.

SECT. V.

Of SCORZONERA and BEETS.

SCORZONERA, or *Spanish Salsifie*, has a Root, which in my Opinion is no less pleasant than the former; it loves a light Soil, and is easily raised by sowing the Seeds in *March*: And *Beets* also, both the Red and White Kinds, are raised in the same Month from Seeds, and delight in a sandy Soil.

SECT. VI.

Of the *RADDISH*.

I Have already mention'd the *Raddish*, as a *Root* which might be sown promiscuously among other *Roots* in *March*, but some Particulars in the *Culture* of it yet remains worthy the Knowledge of my Reader. The Soil it chiefly covets is Sand, or other light Ground well wrought with the Spade: It may be sown in such Land any time between *February* and *September*, minding always to let the Ground you sow be more in the *Shade*, as the Season is more hot. I have sown some *Seeds* of the *Spanish Raddish* in *August*, that have been fit to draw just as the *Winter* began, and have continued good 'till the *February* following: But to have a Crop to succeed those, it is common to sow some at *Michaelmas*, that they may be above Ground in their *Seed-Leaf* only before *Winter*, and those will be in Season about *March*, if they have had the Shelter of some warm Wall.

SECT. VII.

Of *HORSE-RADDISH*.

THE next *Root* I have to treat of is the *Horse-Raddish*, which no *Kitchen-Garden* ought to be without. I have known some *Gardeners* plant *Roots* of it on a piece of Ground three or four Inches deep, and then letting it stand three Years, have taken it up for Market: But a much quicker and better way has been experienc'd by a Friend of mine for the propagating this *Root*, which was in this manner: Dig a Trench in some remote Corner of the *Garden*, about three or four Foot wide, and about sixteen or eighteen Inches deep; the Soil, if possible, should more incline to Sand than Clay; and at *Michaelmas*, which is the best time for this Work, cut some *Horse-Raddish Roots* in pieces of three Inches in length, or thereabouts, and sow them in the bottom of the Trench, covering them with the Earth that was taken out of it; the Spring following

you

you will find them shoot above Ground, five or six Heads from each piece of *Root*, and the *Michaelmas* after that will be strong enough to take up; they will then be straight, well grown, and without Knots, fit for Use.

SECT. VIII.

Of POTATOES.

Potatoes and *Jerusalem-Artichokes*, are *Roots* of less note than any I have yet mentioned; but as they are not without their Admirers, so I shall not pass by the Method of their *Culture* in silence. The *Potatoe* rather loves a sandy than a strong Soil, tho' I have seen them do well in both; but have observ'd, that the *Roots* knot much better, and are sweeter tasted in the *Sand*. The smaller *Roots* or *Knots* of them are commonly sowed to raise a Crop from, and set about four or five Inches deep in the Ground in *March*, at six or eight Inches a-part: When their Haulm begins to decay, which is about *Michaelmas*, we may take them out of the Ground with Forks as we have occasion to use them. Where they have liked the Ground, I have seen above thirty *Knots* or *Potatoes* hanging on the Strings or Fibres of one Plant.

The *Jerusalem-Artichoke* affords a *Root* as large as an ordinary *Turnip*, which in its Taste differs from the *Potatoe*, it being more watery and fleshy: It is one of those *Plants* which can hardly be got out of the Ground it is planted in, and delights chiefly in a stiff Soil, where I have most commonly seen it growing; every little part of the *Root* will grow if they are planted in the Spring like the *Potatoe*, and about the *Michaelmas* following will be fit for Use.

SECT. IX.

Of the ONION.

I Now come to treat of the *Onion*, a *Root* more generally used in the *Kitchen* than any other: Of this there are two Kinds worth the *Gardeners* Care; the

first is the *Spanish Onion*, which affords a large sweet-tasted Root; and the other the *Strasburgh Onion*, which is more biting, and lasts good much longer than the former; but the difference of these two Kinds makes no Alteration in the Culture of them; they should both be sown early in *March*, in rich Garden Soil, and hough'd about the latter End of *April* with a very small Hough, leaving about three Inches between the *Plants*, 'till they begin to grow fit for *Sallads*, and then they may be drawn or thinn'd where they stand close together. In the sowing of this Crop, let not the *Gardener* be too sparing of *Seeds*, lest many of them be naught, which often happens, and it may be too late in the Year to re-sow the Ground, when he is convinced the first *Seeds* have fail'd; better too many than too few; the Ground may be eas'd of too great a Burden, sooner than over-loaded with it. When the *Leaves* begin to change their Colour, the *Roots* will grow no more that Year, and then they may be pull'd up in dry Weather, and laid in Rows expos'd to the Sun, 'till they are dried as well as may be without Doors: After which let no Rain get at them, but spread them on the Floor of a *Green-House*, or such cover'd place, to dry more thorowly for laying up for *Winter*. Some of this Store may perhaps remain good 'till towards *April*, if they were well dried at gathering, and kept so afterwards; but it will be impossible, with the greatest Care, to keep many of them from growing in the House; and of those which happen to *spire* about the beginning of *February*, and have large *Roots*, plant them at two Inches distance in Lines, half a Foot a-part, to bring *Seeds* for another Year. When these have shot up the *Flower-Stems* about two Foot high, secure them with Sticks from the Assaults of the *Winds*; and as soon as the *Seed-Vessels* begin to open, cut them off and spread them on a *Mat* in the Sun to ripen, turning them every Day for a Fortnight or three Weeks before they will be fit to be beaten out of their Husks: Take special Care no Wet get at them, for they will
sprout

sprout
be fit t
has had
so little
appear
terwar

The
in som
Kitcher
will b
the S

T
midd
five
We
them
goo
terin
Yea
Seec

th
in
th
th
b

sprout with the least Moisture, and never afterwards be fit to sow. It is a certain Rule, That if any *Seed* has had Moisture enough to put forth its *Radicle* never so little, and is after that check'd before the *Ear-leaves* appear, it cannot by any means be made to grow afterwards.

The beginning of *August* we must sow a fresh Crop in some warm place to stand the *Winter*, and supply the *Kitchen* when the dry'd *Onions* are gone. This Sowing will be fit to draw in *April*, and furnish a Supply 'till the Spring Crop comes in.

SECT. X.

Of the LEEK.

THE *Leek* is sown in *March* in a well-wrought Ground, and should be hough'd like the *Onions*, and kept free from *Weeds*. In *July*, about the middle of the Month, plant them out in Lines about five Inches a-part in very rich light Soil, but chuse wet Weather if possible, which will contribute to make them very large; for one Shower of Rain does more good to any new transplanted Herbs than twenty Waterings. The *Leek* will not bear *Seed* 'till the second Year, and then must be gather'd and order'd like *Onion-Seed*.

SECT. XI.

Of GARLICK.

GARLICK is propagated from *Cloves* of the *Root* planted early in *March*, about five Inches a-part, the Soil light and sandy; for stiff Ground makes the *Roots* small: The *Blade* will begin to turn Yellow in *July*, and then take them up in a dry Day, and tie them in Bunches for Use. This and all other *Roots* that are to be kept the *Winter*, must be very well dry'd, or they will rot.

SECT. XII.

Of ESCHALOTS.

Eschalots, or Shallots, are of such Use in Cookery, that a Kitchen-Garden ought not to be without 'em: A light sandy Soil is the most agreeable to them, without any Mixture of Dung: They are propagated by planting their Cloves, or Off-sets of the Roots early in March, about four Inches a-part, and will be fit to take up as soon as their Blade turns Yellow, which will not be 'till the latter End of June, or Beginning of July, if they like the Ground; then let them be well dry'd and laid up for Use. N. B. About a Rod square of Ground, planted with these Roots, will be enough for the Use of any Family.

SECT. XIII.

Of CHIVES and the ROCAMBOLE.

Chives should always be found in the Kitchen-Garden; they are frequently used in the Winter in Sallads, when young Onions are scarce. The Off-sets of their Roots should be planted at six Inches distance in March, cutting off their Blades at the same time; they love a light rich Ground and Shade: Thus order'd, they will be fit for Use at any time of the Year; and the oftner they are cut, the smaller will be their Grasse: About one Rod square of them will serve a large Family.

The Rocambole, for its high Relish in Sauces, has been greatly esteem'd formerly, but now-a-days is hardly to be met with; I think however it should not be wanting in a compleat Kitchen-Garden; for considering how small a Quantity of it is sufficient to give us that Relish which many Onions can hardly give, it ought to be preferr'd. The Part of this Plant, which is made use of, is the Head of the Flower-Stem, compos'd of many small Bulbs, which, as soon as they are ripe, should be gather'd and kept dry.

It

It is
or little
lights i

Of A
WE



natur
ced v
dener
in or

I
Met
Beds
and

S
shou
Seed
of S
enc
and
cur
wil
Str
see
Pla
inf
of
me
if
up
th

It is propagated by planting the *Off-sets* of the *Roots*, or little *Bulbs*, six Inches a-part in *September*, and delights in a sandy Loam, without any Mixture of Dung.

C H A P. IV.

Of ASPARAGUS, ARTICHOKEs, COLLY-FLOWERS, CABBAGES, and others of the Cole Race.



THE *Asparagus* is one of the great Dainties of the Spring, and what I account to be part of the most necessary Furniture of a Garden; it brings great Profit to the Gardeners near London, either propagated upon natural Beds (as they are call'd) or when they are forced with Dung in the *Winter*. I have heard that a Gardener about *Westminster* has receiv'd above thirty Pounds in one Week for forc'd *Asparagus*.

I shall therefore be very particular in setting down the Method of propagating this Plant, as well in *Natural Beds*, as in the *Hot Bed*; and first begin with the *Seeds* and Manner of raising them.

Such as are minded to make a Plantation of *Asparagus*, should have a peculiar regard to the Goodness of the Seed they design to sow, for therein lies the chief hopes of Success; the largest *Buds* therefore should always be encouraged to run up as soon as they appear above Ground; and when they begin to branch must be staked up to secure them against the Winds: These vigorous Shoots will afford us *Seeds* well nourish'd, partaking of the Strength of the *Mother Plant*. The largest I have yet seen are the Produce of *Batersea* in *Surrey*, and such like Places, where the Soil is sandy; so that we may readily infer what Soil is the most proper for them. In Ground of that Kind, without any Mixture of Dung, I recommend them to be sown about the first Week in *March*, if the Weather be open. In this Seminary they come up without any Trouble, and will be fit to plant out the *February* or *March* following, either to train up for
Hot

Hot Beds, or to be planted for a Crop in *Natural Beds*; for Plants of one Year old will thrive much better when they come to be transplanted in *Natural Beds*, than those that have stood two Years in the *Seed Bed*.

If we raise them for the *Hot Bed*, make choice of a Piece of Ground that has been enrich'd with Dung, and well dug and mellow'd; upon which strike out Lines at seven or eight Inches a-part, and plant the *Asparagus Roots*, when they are one Year old, in them at four Inches Distance: In this Nursery they are to remain two Years before they will be fit for the *Hot Bed*, cutting down their *Haulm* every *Michaelmas* and keeping them free from Weeds, as we must do the Plants in the *Natural Beds*.

If we chiefly covet to raise *Asparagus* in the *Winter*, sow every Year, and make Plantations after the same Manner related, to have Plants that may succeed one another. The *Hot Beds* must be made pretty strong, and cover'd immediately with Earth six Inches thick, encompass'd with *Straw-Bands*; in this plant your *Asparagus Roots* (taken fresh from the *Nursery Beds*) as close as they can be placed together without trimming them, or cutting off any of their *Fibres*. When this is done, cover the Buds of the Plants two Inches thick with Earth, and let it remain in that State for five or six Days before the Frames and Glasses are put over it, and then lay on three Inches thick of fresh Earth over the whole; in about ten Days after Planting, the Buds will begin to appear above Ground, and then give them what Air the Season will allow; for 'tis the Air that makes them Green, and chiefly contributes to their good Taste.

A Bed thus prepared will last good about a Month, shooting fresh Buds every Day, if the severe Weather does not hinder; As it begins to cool, some warm Horse-Litter should be laid upon the Glasses every Night, which will contribute as much to make the Buds shoot, as if they were to have new Dung put under their Roots. The time for this Work is from *November* 'till *April*, when the natural Crop comes in, making fresh Beds every Month to follow one another, and give us a constant Supply.

But

But to plant *Asparagus* for a *Natural Crop*, we must proceed in a very different way. About the Beginning of *March* (which is the best time for transplanting of *Asparagus*) measure out your Ground, allowing four Foot for the Breadth of each Bed, and two Foot for every *Alley* between the Beds; open a Trench at one End of it, and lay into the bottom of the Trench about the Thickness of six or eight Inches of Horse-Dung well rotted: Go on then to trench the same Quantity of Ground, lying next to the first Trench, throwing the Earth which comes out of the second Trench upon the Dung laid in the bottom of the first: Continue to work in like Manner 'till the whole Piece is compleated and levell'd; then in Lines, at eight or ten Inches distance, plant the *Asparagus* taken fresh out of the *Nursery*, spreading their Roots, and covering their Buds with Earth, about four Inches thick.

When four Rows are planted, leave a Space for an *Alley* about two Foot wide, and proceed to place four Rows more for another Bed, and so continue your Work 'till the whole is planted. As soon as that is done, sow the whole Piece with *Onions*, and rake it over as level as possible, for the *Alleys* will not be of any Use 'till after *Michaelmas*, when the *Onions* will be off, and the *Shoots* the *Asparagus* Plants have made that *Summer* must be cut down; then dig up the *Alleys*, and throw part of their Soil upon the Beds, to raise the Earth about five or six Inches above the Buds of the Plants, supplying the *Alleys* at the same time with Dung, or some rich Soil.

In this State let the Beds remain 'till *March* following, and then rake down the Earth. I have known some Gardeners set *Beans* about *November*, in the *Asparagus* *Alleys*, close under the Sides of the Beds, which may best shelter them from the *East Winds*.

The *Alleys* must be turn'd up in this Manner every *Winter*, and now and then enrich'd with Dung; but we must be sure to let *Michaelmas* be pass'd before we cut down the Haulm of the *Asparagus*, and give them their *Winter Dressing*; and also that we are not later than

than *Mid-March* without raking and laying smooth the Beds; for after that time, if we should disturb the Earth, we should run the Hazard of breaking many Buds that begin to shoot.

It is a general Rule not to cut any 'till the fourth Year after Planting, altho' the Buds are very large, for it weakens the *Roots*: However I think (to satisfy the Impatience of some) that where the *Plants* are strong, as in the third Year, a few may be taken here and there in very small Quantities, about six times in the Season, without greatly hurting the Plants.

The fourth Year we may certainly begin to cut, and we shall then sensibly feel the Profit of our Labour and Expectation: Not any Bud that appears above Ground must be suffer'd to grow in the Cutting Season, unless they come from such *Roots* as have been planted to make good the Deficiencies of the first Plantation, and those must be suffer'd to run up every Year 'till they have gather'd Strength.

About the Beginning of *April* the *Asparagus* appear above Ground, and may be cut 'till towards the Beginning of *June*, when they have stood five Years, but will not bear cutting longer than *Mid-May* if they are younger: In the Cutting of them have special Regard to cut downwards a little sloping, with a Knife made blunt at the Point, lest you injure the *Crown* of Buds lying on the top of the *Root*; for if you cut them more horizontally, you may then injure several Buds that are under Ground: A Piece of *Asparagus*, thus carefully managed, will last good near twenty Years.

SECT. II.

Of the *ARTICHOKE*.

WE may either propagate the *Artichoke* from *Seeds* or *Suckers*, but the latter is most commonly practis'd; however let us use either way of raising them, we must be sure to allow them a strong rich Ground, with Dung mellow'd in it, well expos'd to the Sun: About the beginning of *March* we may

may sow the *Seeds* to be planted out the following *Month*; and the middle of *March* is the most proper Season to slip the *Roots*; either for new Plantations, or to make good the Deficiencies of the old ones, which seldom pass a *Winter* without some Loss, notwithstanding the greatest Care has been taken to preserve them. When we take off the *Slips*, we must leave growing upon every old *Root* (if it be strong) three Heads, which will give us so many good Blossoms about *Mid-June*; and the *Slips* we take off should be planted two Foot a-part in Lines, four Foot distant from each other, for nearer than that would hinder the thriving of the *Plants*. This young Plantation must be well water'd after planting, and perhaps may afford us some good Flowers about *September*, tho' for the sake of the *Plants* it is to be wish'd they would not; for when they blossom the first Year, the *Roots* are endanger'd, therefore some *Gardeners* break off the Blossoms as soon as they begin to appear, and about the middle of *July* break off the Stems of the old *Roots* that have done blowing, that they may furnish themselves with fresh Shoots to stand the *Winter*.

SECT. III.

Of the COLLY-FLOWER.

WHoever is minded to propagate this *Plant* must chiefly have regard to the Goodness of the *Seed*, which ought to be saved only from such *Flowers* as were large and white, for otherwise there can be no hope of Success; and in the next place the Ground must be very rich, and not over dry. Being thus provided, we may begin to sow the *Seeds* in *March*, in some well-expos'd Corner of the *Garden*, where the young *Plants* may be shelter'd at their first coming up from the frosty Evenings. About the middle of *April*, when they are in their first *Leaf*, they must be planted in a *Nursery*, about five or six Inches a-part, and stand there 'till the latter End of *May* or *June*, to be removed to such places as you design they shall

shall blossom in; if it is possible, do this Work in rainy Weather, which will make them strike Root quickly; or else, if the Season happens to be dry, make Holes in the Ground like Basons, about three Foot a-part, and water them very well immediately before you plant the *Colly-Flowers* in them, which will contribute to keep the *Plants* fresh and green, 'till their Roots begin to shoot; by this means, and frequent Waterings when the Season is dry, we may expect large Flowers in Autumn, but especially if the *Alleys* between the *Plants* are floated with Water, which will nourish them much more than common Watering. Some of this Plantation will not offer to flower 'till after *Michaelmas*, and then such *Plants* must be taken up with the Earth at their Roots, and set together (upright) in a *Green-House*, or some other such like place, where the Blossoms will enlarge themselves, and be fit for Use in the *Winter*: So likewise if we have any *Artichokes* at that time fit to cut, take them with all their Stalk, and set them in Sand in the same place, which will preserve them good a long time.

But we must take a very different Method to have *Colly-Flowers* in the *Summer*; about the 20th of *July*, or first Week in *August* at farthest, we must sow the *Seeds* upon some decay'd *Hot-Bed*, and transplant them about three Inches distance, as soon as they have made their first *Leaf*, upon some other well prepared *Bed*: The middle of *September* draw out every other *Plant* from that Plantation, and set them four or five Inches a-part, either under a *South-Wall*, to stand there 'till Spring, when they are to be planted out for Flowering, or else set them in the places where they are to blossom, and cover them with *Glass-Bells* in the Severity of the *Winter*; and this last Method I think to be the best, because they will be well rooted in the Spring, and consequently be better able to make large Blossoms than those that are planted in the Spring, and have the Difficulty of making new Roots when the others are growing.

Those

Those
mas, wil
that are
to make
not all t
another
Spring
lowing
by that
time) t
will ma
Month

It is
plant l
our C
Sun: I
choke-I
so be
are gr
appear
them,
ing H
Yellow

In
the V
somet
vise, t
bloss
some
ing t
them
Seeds
and
for
'till

Those *Colly-Flowers* that are planted out at *Michaelmas*, will Flower about three Weeks sooner than those that are planted in the Spring; however it is necessary to make Plantations in both Seasons, that they may not all blossom at one time, but gradually succeed one another. An understanding Gardener will also make his Spring Plantation of *Colly-Flowers* at several times, allowing three Weeks or a Month between each; and by that means (altho' all the Plants were rais'd at one time) the checking them at different Periods of Growth, will make them blossom earlier or later by two or three Months.

It is a Rule which ought to be observ'd, when we plant late in the Spring (in *May* for Example) to set our *Colly-Flowers* where they may not have too much Sun: I have known some do very well between *Artichoke-Plants*, and such like places; and then it must also be observ'd that they have Water enough, for they are great Lovers of it. When the Blossoms begin to appear, break some of the great Leaves and lay over them, to keep the *Flowers* from Rain, and the scorching Heat of the Sun, which would make them turn Yellow.

In *March* and *April* take care to shelter them from the Winds, which are very apt to damage them, and sometimes blow them up by the Roots: I would advise, that if you have a good kind of *Colly-Flower* that blossoms early, and has large and close *Flowers*, to let some of the forward *Plants* stand for *Seed*, carefully tying them to Stakes, that the Winds may not injure them. When the *Seed-Vessels* are full grown, and the *Seeds* within them are perfected, cut off the whole Stalk, and let it dry in the House before it be thrash'd out; for it is not necessary to leave the *Seed* upon the *Plants* till the *Pods* are dry, lest they open and shed.

SECT. IV.

Of CABBAGES, and their Kinds.

WE have several Kinds of Cabbages, the large *White Cabbage*, of which the Gardeners at *Batersea* in *Surrey* have a Kind that comes very early, and is the best for *Summer Use*: If it be sown in *July*, and stands the *Winter*, I have known some of them ripen in *May*; or else, if we are minded to have of them ripe in the *Winter*, sow them in *March*, and plant them out in *July* at two Foot distance, watering the Ground well before Planting, if the Weather be dry. In the same manner also must be sown and planted the *Savoy-Cabbages*, or *Savoys* (as they are call'd) for *Winter Use*, for they are not good 'till the Frosts have pinch'd them: These and all other kinds of Cabbages, will put forth Sprouts from the Stalks that towards the Spring are even preferable to the Cabbages themselves, and will continue so to do 'till the middle of *April*, about which time Greens of this kind are very scarce, and therefore young Cabbage-Plants and Coleworts that were sown in *July* or *August*, are then the only Greens, except *Spinage*, that we have recourse to.

When we have a right sort of Cabbage to our mind, we may plant it for Seed in the following manner: In *January* make choice of the driest part of the Garden; and having strip'd some full-grown Cabbages of their loose Leaves, plant them so deep in the Ground that none of the Stalk appear above it, and then make up a Bank of Earth round about the Cabbage it self, so that none of it be seen but the Top, from whence the Flower-Stems will begin to break in *March* or *April*, and then must be staked up as the *Colly-Flowers*: The Seed, when it is full grown, must be gather'd, and order'd like that of the *Colly-Flower*.

CHAP. V.

Of LEGUMES or PULSE; such as BEANS, PEASE,
KIDNEY-BEANS, &c.

SUCH as design to propagate *Beans* or *Pease*, must have a large parcel of Ground; for 'tis not a small Quantity will suffice to furnish a very moderate Proportion of them; more especially because they should be sown at different Seasons: That from the time they first come in, to the beginning of *Winter*, we may always have a fresh Supply of young ones, as the former Crops decay.

SECT. I.

Of BEANS.

THE *Bean* has many Varieties; two Kinds of which I shall only make mention of, viz. The *Spanish Bean* for an early Crop, and the broad *Windsor Bean* for the *Summer*: The first of these are commonly put into the Ground in *November* or *December*, about five Inches a-part in some well-exposed place, commonly in a single Line under a *South-Wall* or *Hedge*, to shelter them from the sharp Winds of the *Winter*; but I rather make choice of a *Hedge* than a *Wall*, for this Reason, that when the *Beans* are above Ground, and the *Frost* takes them, the *Wall* will, when it is somewhat warm'd by the *Sun*, thaw them, and the Ground where they stand, 'till Night comes on, and then they freeze again; and so if the *Frost* lasts any time, they are continually harass'd in this manner, Night and Day, 'till they are destroy'd. But on the contrary, a *Hedge* shelters them from the sharp Winds, and not reflecting any Heat upon them in the Day, as a *Wall* will do, the *Plants* remain in the same frozen State, 'till a general *Thaw* releases them, without undergoing such violent Fits of Alteration, which must certainly impair their Parts.

If we have double Lines of these forward *Beans*, let not the Rows be nearer together than two Foot, for else they would smother each other when they come to grow up, and then by running too much into Stalk, would produce but few *Blossoms*, and less *Fruit*: It must be observ'd likewise, that if they have shot any considerable length before the severe *Frosts* begin, they must be earth'd up within a little of their Tops; and in the Time of their *Blossom*, cut off the Top of every *Bean-stalk*, to make them set their *Fruit* the better.

About *February* we may set a second Parcel of Ground with *Spanish Beans*, to come in after the former; and in *March*, plant some *Windsor Beans* for the first time, for they are tender, and cannot bear the *Frosts*. I have been told by Mr. *Furber* of *Kensington*, who I have had occasion to mention before for his Ingenuity, that if we set the Rows about a Foot asunder, suffering them to grow 'till they are almost ready to blossom, and then cut down every other Line within two or three Inches of the Ground, we shall then have a double Crop of *Beans* from the same Sowing, one coming in about *July*; and that which was cut down, springing afterwards afresh from the Roots, will have *Beans* about *Michaelmas*: 'Tis therefore I would advise, that if it should happen that two Crops of *Beans*, sown at different Seasons, should by Accident tend to blossom at the same time, as they often do, cut down one of them to have a late Crop.

'Tis also necessary to set *Beans* in *April* and *May* in moist places, and then they must be allow'd a greater distance between each other than those that were planted forwarder in the Spring; but above all, keep them clear of Weeds; and I think it would be good Husbandry to water them about the time of their Blossom, if the Season be dry, I have known likewise *Beans* planted in *June*, that have yielded a very good Crop late in the Autumn.

Beans love a stiff Soil, without any Manure: When their Seeds are full grown, the Plants may be pull'd up by

by the
place,

T
in the
any G
Kinds
a-kin
guish
at the
in gi
Busin
Fruit
be un
not a
But t
many
I hav
Gard
It
denen
Crop
thro
Deca
they
Mor
of t
be f
oth
they
abo
a li
from
I
sho

by the Roots, and set to dry in some well-expos'd place, and then thrash'd out for Use.

SECT. II.

Of PEASE.

THE Kinds of *Pease* which I shall mention, are the *Hotspurs* for *Winter* Sowing, the *Dwarfs*, and the *Roncival*, or *Dutch Admiral*, to be sown in the Spring; these Sorts may well enough suffice for any *Garden*, without enumerating at least fifty other Kinds that I have heard of, which perhaps are so near a-kin to these, that the difference can hardly be distinguish'd but in the Names only. I have often wonder'd at the Indiscretion of some People, who take a Delight in giving cramp Names to Plants, and make it their Business to multiply Species without Reason, as if a Fruit would be the better for a Name that could not be understood; or that the Works of Nature were not already numerous enough for us to contemplate: But to say no more of that vain Humour, which too many are subject to, I shall proceed to lay down what I have observ'd relating to the Culture of *Pease* in a *Garden*.

It is not one of the least Perfections of a good *Gardener*, if he has Ground enough, to provide so many Crops of *Pease* every Year, as may furnish a Table throughout the whole *Summer*: About *November* or *December* is soon enough to sow the first Crop; for if they were put into the Ground sooner than those Months, they would be endanger'd by the Frosts: Some of the *Hotspurs* are the most proper for that Season to be sown in *Drills*, each *Drill* about two Foot from the other, the Lines running from *North* to *South*. When they have shot about six Inches high, Earth them up about four Inches on both Sides of the Lines, raising a little Bank on the *East* Sides of them, to defend them from the *Blasts* which accompany the *East Winds*.

In *February* a second Crop of the same kind of *Pea* should be sown, and in *March* we may put in a third

of the same Sort. About the beginning of *April* some Ground may be prepared for sowing some of the *Dwarf Pease*, especially the very short Kind, which seldom rises higher than half a Foot, or covers more Ground than six or seven Inches square; and notwithstanding the smallness of this *Plant*, it will yield near as many *Pease* as one of the largest Kinds, and those not inferior to any in their Taste; these *Pease* should be set four or five Inches a-part, in Lines about eighteen Inches distant from one another, if they are design'd for Table use; or if they are planted for Seed, the Lines need not be above a Foot a-part, for then there will be no occasion to go between them 'till they are ripe enough to be pull'd up.

Besides this small Sort, there is another kind of *Dwarf Pea*, which rises about a Foot high, a very good Bearer, and well tasted: This Sort may be sown thicker than the former, because they carry their *Vines* more upright; but the Lines should be two Foot a-part. In *April* these may be sown, or in *May* or *June*, as well as the former, to have a constant supply of young *Pease* following one another: The smallest sort I have sown in Edgings, and have gather'd great Quantities from them; and I think them much the best for *Hot Beds*, if we covet *Pease* in the *Winter*, as they take up but little room, and afford a considerable Crop: I am assured one *Bed* of them will yield as many *Pease* as three *Beds* of the same size sown with the common sorts: For this End sow them upon a gentle *Hot Bed*, the first Week in *September*, about five Inches a-part.

The end of *April*, or beginning of *May*, is a right Season for sowing the *Roncival*, or *Egg Pea*, which is also called the *Dutch Admiral*; this is the most rampant of all the *Pea* Kind, and therefore requires more room than the others; sow them about two or three Inches a-part in Lines, planting two Rows within eighteen Inches of one another, and then leave a space of two Foot and a half, for an Alley to pass through when they are fit to be gather'd: Having allow'd this Passage, plant two Lines more, eighteen Inches a-part, and so continue to do, allowing the

the bre
the wh
bout fi
and set
high,
run up
ver wi
staked

W

Bater
pant,
Besid
have
duce

W

light
ing t
verin

Wet
rots

T

a-pa
same

i. e.

Foo

stak

are

onc

tinu

to f

v

as i

we

th

the breadth of two Foot and half for each Alley, 'till the whole Piece is sown. When they are grown about six Inches high, earth them up like the others, and set one row of Sticks or Boughs, about six Foot high, between each double Line of *Pease* for them to run up, and they will bear plentifully; which they never will do if they are set too close together, or are not staked up.

SECT. III.

Of the KIDNEY-BEAN, or French Bean.

WE have two Sorts of *Kidney-beans* common in our Gardens; the one which bears early near the Root, without running high, call'd the *Batersea-bean*; and another Kind, which is more rampant, growing near six Foot high, if it is stak'd up. Besides these, I have seen above fifty other sorts that have been brought from foreign Parts, but seldom produce any Quantity of Fruit in our Climate.

We sow *Kidney-beans* the first Week in *April*, in a light fresh Soil, making *Drills* from *North* to *South*, laying the Beans in them about four Inches a-part, and covering them with Earth, rais'd in a Ridge to keep the Wet from them; for if the Ground be over moist it rots them.

The Lines of the *Batersea-Bean* should be two Foot a-part, and the other Kind should be sown after the same Manner as I have prescrib'd for the *Roncival Pease*, i. e. in double Rows and Alleys between them, two Foot and half wide. The *Batersea* Kind need not be staked, but the others will not bear well without they are staked. From the first Sowing in *April*, we may once every three Weeks, 'till the middle of *July*, continue to sow fresh Parcels of Ground with *Kidney-Beans*, to succeed one another 'till the *Winter* comes in.

We must observe, that when the Ground is very dry, as in *June* and *July*, and the Weather likely to be hot, we must water the *Drills* as soon as we have open'd them, before we put in the Seed, which will contri-

bute to make them sprout; but we must avoid watering them after they are sown, lest we rot them.

Out of Curiosity I have known some of the *Batersea* Kind of *Kidney-Bean* sown in Hot Beds, five Inches apart, about the first Week in *September*, and they have had *Beans* fit to gather about *January*; but these, as well as other *Plants* of this Nature, when they are forc'd, must have all the Air that can possibly be allow'd them, or the *Plants* will be apt to decay.

The *Wing Pea*, when it is very young, is by some dress'd and eaten like *Kidney-beans*, but in my Opinion are not near so good; the Blossoms indeed are of a beautiful Colour, and make a good Show in a *Garden*, if they are set in Edgings; it grows in any Soil without Difficulty, if we put in the Seeds in *April*.

CHAP. VI.

Of SALLETS, their Culture.



As the different Humours of Mankind will not allow me to prescribe any certain Mixture of Herbs as the most pleasant to the Palate, so I shall content my self with giving my Reader only some general Hints relating to the several Sorts of common *Sallet-Herbs*, and leave every one to please himself in the Mixture of them.

I would have the Relish of the several Herbs consider'd, as for Example, which are most hot and biting; as *Cresses*, *Mustard*, *Sellery*, *Taragon*, *Chervil*, &c. and the more cool and insipid to the Taste, as *Turneps*, *Rape*, *Spinage*, *Corn-Sallet*, *Lettuce*, *Purslane*, and such like; by this Knowledge a *Gardener*, when he composes a *Sallet*, will so judiciously mix his Herbs, that the too strong Taste of one Kind may not over-power all the rest, and discreetly make use of the insipid Sorts to qualify the Pungency and Heat of the others, as the Season of the Year is more hot or cold; so that every *Sallet*

let we eat, may not only be agreeable to the Taste, but also a Sort of Physick to the Body.

SECT. I.

Of SMALL HERBS.

WHAT the Gardeners call *Small Herbs* in *Sallets*, are such as should be always cut while they are in the *Seed-Leaf*; such are *Cresses*, *Mustard*, *Raddish*, *Turnep*, *Rape*, *Spinage* and *Lettuce*; all these are commonly known to Gardeners, and are generally raised by them from the Seeds sown in *Drills* or *Lines*, about a Yard in length, in such an Exposure as the Season of the Year requires; that is, from *Mid-February* to the End of *March*, under Glasses and Frames; and from that time to the middle of *May*, upon natural Beds of Earth, warmly expos'd; and afterwards, as long as the Summer Heats remain, in more shady Places. About the middle of *September* and *October* make your *Sallet-beds*, as I have advis'd in *February* and *March*; and then as frosty Weather begins to come in, prepare moderate Hot Beds to sow your *Sallets* upon, to be continu'd during the *Winter* Months; these should have as much Air as possible, as well to give them Colour, as to help their Taste. It sometimes happens, when the Frost is very violent, that the *Small Herbs* are frozen, notwithstanding the greatest care; but I am told, that putting them into Spring-Water for two Hours before they are used, will recover them. I likewise find it is the best way to draw the *Small Herbs* up by the Roots, from the Hot Beds; for if the Roots are left in the Earth, when you sow a second Crop of *Salleting* upon the same Bed, it will not prosper. Also it shou'd be observ'd in sowing the second Crop, that Seeds of the same Kind should not be sown in the same Place, but ease the Ground with varying its Burden, putting the Seeds of hot Herbs where the cool ones grew before; and this ought always to be observed in the Culture of every Plant, that we do not place them immediately upon that Spot where the same Kinds have just been growing.

growing. The most skilful *Farmers* and *Gardeners* observe this Rule with that Exactness, that it seems as if one Kind of Plant meliorated and prepared the Ground for the Reception of another.

For the greater Perfection of our *Winter Sallets*, it would be well to sow some Lines of *Cresses* in the natural Ground about the middle of *August*; for they will resist the Frosts of the *Winter*, and help greatly to enrich our Hot-Bed *Sallets* with the high Taste they acquire, by being expos'd in the open Air. Likewise at the same time sow a Bed of *Chervil* for *Winter* Use, as well to mix among our *Sallet-Herbs*, as to put in *Soops*, &c.

SECT. II.

Of SELLERY and ENDIVE.

OUR *Winter Sallets* are likewise greatly improv'd by blanch'd *Sellery*, which is a hot Herb, of a very rich Flavour; it is raised from Seed sown in *March* and *April*, in light Earth, in some well-expos'd part of the *Garden*, and planted out, about six Weeks after it is come up, in Beds, allowing four Inches distance between the Plants; they may there remain 'till the middle of *June*, at which time some of the first Sowing will be fit to plant in Trenches for blanching. The Trenches must be cut by a Line, eight or ten Inches wide, and about the same depth, and as soon as they are made, put in your Plants, after having prun'd off the Tops and Roots of them: They must not stand nearer together than five Inches, if they are strong; and as they grow large, earth them up within four or five Inches of their Tops, and so continue to do at several times, 'till they are fit for Use. It is necessary to make three or four different Plantations of *Sellery* at several times, one to come later than the other; and we may note, that these Plants will not be white 'till six Weeks after they are earth'd up; they love a light rich Soil.

Endive,

Endive, when it is blanch'd, is much used about *London* in *Winter Sallets*; tho' in my Opinion, it is a Plant hardly worth our trouble, as it has neither Taste or Flavour: It loves a light rich Soil, and should be sown about the latter End of *April*, lest it run to Seed, as it is apt to do, if it is sown too early in the Spring. When it has been come up about six Weeks, plant it in Beds as I have directed for the *Sellery*, and about the middle of *July* plant it in Rows, about six Inches a-part; and as soon as it is well grown, tie up some of it to whiten, and every Fortnight, as long as it lasts, tie up fresh Parcels of it.

SECT. III.

Of the CABBAGE-LETTUCE.

WE have great Varieties of *Lettuce*, many of which have been more esteem'd for their Rarity than for their Goodness; but of all that I have yet try'd, I find none to exceed the good Qualities in the *Roman Lettuce*, the *Dutch Brown Lettuce*, and the *Imperial* and *Silesia* Kinds; all which sorts Cabbage extreamly well, and are well tasted.

The *Brown Dutch Lettuce*, if it be sown about the middle of *August*, will be fit to transplant in *September*, to stand the *Winter*, either for Cabbaging early in the Spring, or to be cut for *Winter Sallet*; it loves a rich light Soil, and warm Exposure, as do all of this Tribe, especially if they are sown towards the *Autumn*. The *Imperial* and *Silesia Lettuces*, if they be sown about the same time with the former, and planted out in warm Places, will be very large, and be fit to cut very early in the Spring; but the *Roman Lettuce* I have not known to bear the Frosts.

In *March* are commonly sown all these Kinds in the open Ground among other Crops, as I have already hinted elsewhere: And that there may not want a constant Supply of them, sow some every Month from *March*, 'till you put in the *Winter Crop*, and plant them out in Beds, about five Inches a-part, three Weeks after they

they come up ; for transplanting them contributes to make them Cabbage.

Such as produce large *Cabbages* early in the Spring, may be suffer'd to stand for Seed, and should be stalk'd up lest the Winds annoy them ; but the *Imperial* Kind will hardly run to Seed if the Crown of its *Cabbage* be not cut cross-ways, and carefully open'd to give way for the *Flower-Stem* to shoot ; and then likewise the *Plant* will be in danger of rotting, if it should rain, therefore fix a *Glass Bell* over it : The *Seeds* will be fit to gather as soon as they begin to shew their *Dawn*, and then pull up the *Plants*, and set them to dry in a *Green-House*, 'till you find the *Seed* is fit to be thrash'd out.

It is observable, that tho' the *Plants* we save the *Seeds* from, were of extraordinary good Kinds, yet those *Seeds* will degenerate from the *Mother Plant*, if they are cultivated in the same *Garden* where they were saved : Therefore if you can possibly meet with an honest Correspondent, who gathers yearly the *Seeds* of such *Plants* as you have occasion for, change with him every Year, and you will both find your Advantage by so doing.

SECT. IV.

Of Burnet, Corn-Sallet, Purslane, Sorrel, Spinage and Taragon.

THE Contents of this *Section* will be of the *Culture* of certain *Herbs*, which are often used in *Sallets*, and serve as Additionals to those I have before mention'd. *Burnet* is a cool *Herb*, a perennial *Plant*, whose tender *Leaves* being mix'd with other *Sallet-herbs* in the *Winter*, gives us the agreeable Flavour of *Cucumbers* : It is propagated by *Seeds* sown in *March*, and may likewise be encreased at that time by parting the *Roots*.

Corn-sallet is raised from *Seeds* sown any time of the Year, and makes a very good *Sallet Furniture* in the *Winter*.

Purslane is an insipid *Herb* to the Taste, but very cooling, and is admir'd by some People in Summer *Sallets* : We have two sorts of it, the *Golden Purslane* and the

the *Green* sort, which are both rais'd from Seeds sown in some warm place in *April*, or may be sown earlier if they have the help of *Glasses*.

Sorrel is also used in *Sallets*, especially in the Spring the young Leaves are very agreeable; it is raised from Seeds sown in *March*, commonly in Rows or Drills.

Spinage I have already mention'd to be one of the necessary Ingredients in raw *Sallets*, to be cut in the *Ear-Leaf*; but it is of far greater Use for boil'd *Sallets* in *Winter* and the Spring. The Beginning of *August* it should be sown in some place well expos'd to the Sun, that the Leaves may be large enough to cut for boiling in the *Winter*; and in *March*, *April* and *May*, we must not fail to sow several Parcels of Ground with it at different times, about a Fortnight distant from one another, to supply the Table constantly till other Greens are plenty; for in the Spring one Crop will hardly last good longer than a Fortnight without running up to Seed. We have two Kinds of it, the prickly sort, and the round *Spinage*, differing in the shape of their Seeds according to their Names, but I find no Difference in their Taste when they are boil'd.

Taragon of all other Herbs, should not be wanting in a *Sallet*, as it is a Cordial Herb, tho' the Taste of it may not perhaps be so grateful to the Palate at first as the common Herbs: For my own Part, I think it pleasant, if there is not too much of it; a few Leaves, or three or four of the tender Tops, are enough to give a *Sallet* an agreeable Relish. This Plant loves a warm Exposure, and is propagated from Slips taken from the Root and planted in *March*.

In the Spring, *Dandelion* blanch'd, which may be gather'd almost in every plough'd Field, is an excellent *Sallet* being mix'd with other Herbs. Some likewise gather *Violet* Flowers, *Cowslips*, and the Blossoms of *Burrage*, as part of their *Sallet* Furniture; and in the Summer the Flowers of the small *Nasturtium Indicum*. In short, whoever is once acquainted with the different Flavours of the several Herbs I have named in this Chapter, may easily please himself with a *Sallet*.

N. B.

N. B. Whatever Seeds are saved or gathered, must be very well dry'd and ripen'd before they are thrash'd out; and then after cleaning them, must be expos'd to the Air and Sun for a Week at least before they are laid up, otherwise they will mold and rot.

C H A P. VII.

Of POT-HERBS, and such as are commonly used for Stilling.



HAT I may not omit any thing that is proper to be done in the *Kitchen Garden*, I propose to treat of such *Plants* and *Herbs* in this Chapter, as are commonly used for *Stilling*, and are sometimes dry'd for the Use of the *Kitchen*; and first of such as are *Aromaticks*.

Rosemary and *Lavender* are both durable *Plants* and *Ever-greens*; they love a light sandy Soil, and are both raised from Slips planted in *April*; quickly taking Root if they are Shoots of the last Year, but will not grow if they are older: They are apt to suffer by the Frost, especially if they have too much Wet, and therefore should be planted chiefly in the driest Parts of the *Garden*, where they may be the most expos'd to the Sun. *Lavender* makes a fine Edging in large Walks, if it be often clip'd; but for the sake of its *Flowers*, which are often used, we must have a Plantation of it a-part; for were the Edging *Plants* suffered to flower, their Beauty would be spoil'd.

Thyme and *Hyssop* are either raised from Seeds sown in *March* or *April*, or propagated from Slips planted in those Months: We have many sorts of *Thyme*, of various Scents and Uses: The *Pot Thyme*, *Lemon Thyme*, and a Sort with variegated Leaves are most commonly cultivated, and make very good Edgings that will last seven or eight Years: And beside them the *Mastick Thyme* and the *Marum Syriacum* or *Cat Thyme*, are cultivated in many *Gardens* for the sake of their refreshing Odour;

but

but the latter, if it is in small Quantities, must be carefully defended from the *Cats*, who love to eat it, and are intoxicated with it; but I observe, where it is in abundance, the *Cats* never disturb it. These two last Kinds should be planted in the warmest parts of the Garden, the others will grow any where.

Sage has many Varieties, but we propagate only three sorts of it, viz. The *Red Sage*, the *Tea Sage*, or *Sage of Virtue*, and the *Wormwood Sage*; these Kinds are raised from Slips taken from the Roots about the beginning of *April*, and planted a Foot a-part in light Earth. The *Sage of Virtue* should be cut for drying when it is full of young Shoots, for those only are fit to make *Tea* of; they should be gathered in a dry Day about Noon, and laid to dry in the Shade to be preserv'd for Use. I have been often told, that the *Wormwood Sage* is preferable to the former, affording a pleasanter Liquor, and more grateful to the Stomach.

We seldom meet with more than two sorts of *Rhue* in our *English Gardens*, and their difference only consists in the Colours of their Leaves; the one being variegated with Cream Colour, and the other of a plain Green: This *Plant* delights in shady Places, and is easily multiply'd by Slips set in *April* in a light Soil. In times of Pestilence this *Plant* has been much in request, believing it prevents Infection.

Mint, or *Menth*, and *Balm*, should neither of them be wanting in a *Kitchen Garden*; they are propagated by parting their Roots any time in the Spring, and will grow any where. *Mint* indeed is more generally cultivated than the other, as it is of it self a pleasant Sallet, and good in Soops and some Sauces, besides its extraordinary Use in *Stilling*: When it is about a Foot high, it should be cut to dry in Bunches for *Winter* Use, observing this as a general Rule, to cut every *Herb* design'd for drying in a dry Day, and then to dry them in the Shade.

Some *Gardeners* think it worth their while to plant some large Roots of *Mint* in the Corners of their *Hot Beds*

Beds about *November*, that they may have young Shoots of it to mix among their *Winter Sallets*.

Tansie is increas'd by parting the Roots in the Spring, and is a *Plant* so valuable, that it must not be wanting; some of it should always be kept dry in the *Winter*, especially for the Use of those who are afflicted with the *Gout* in their Stomach: It is of that sovereign Efficacy in that Case, as I have found by Experience, that I think I should be guilty of ill Nature, if I was to pass by this Opportunity of making known the Method of using it. Boil half a handful of this *Herb* in half a Pint of strong *White Wine*, and drinking this Decoction as hot as possible; I have always found it to remove the Pain in less than a Quarter of an Hour.

Wormwood is either raised from Seeds or Slips planted in *March*; it will grow in any Soil, and be apt to overrun the Ground, if it be eaten by Hogs when the Seeds are ripe, which passing through their Bodies germinate and come up very quickly.

Penny-royal and *Camomile* are useful Herbs, and very well deserve Place in the *Garden*; they delight in moist shady Places, and prosper best in a stiff Soil; they are both propagated from Slips planted in *March* or *April*.

We have two Kinds of *Marjoram* commonly propagated in *Gardens*; one Sort called the *Winter Sweet-Marjoram*, which will resist our Frosts, and remain good two or three Years without renewing, and the other is sown annually upon the *Hot Bed* in *March*, not being able to defend it self from the Violence of our Winters: The first Kind is increas'd by planting the Slips about *March* or *April* in moist Places, but has not that agreeable Scent which we find in the other; therefore some of the last Sort should be dry'd every Year when it is grown pretty large.

Carduus is rais'd from Seeds sown either the middle of *August*, or in *March*; but I commend the Autumn Plants before those rais'd in the Spring, as they are much larger, and more vigorous than the others, and besides have a much better Season to dry in.

Angelica

Angelica
rich Gr
Years w
Drag
well fo
the wh
transpla
March
Fenn
sown i
not be
Stalks
Par
a Kitch
and ra
very Y
I ha
requir
that t
be pla
venier
they

Of I
sen
for



rem
som
taug
Ho
the

Angelica is rais'd from Seeds sown in *March* in a moist rich Ground; it is a *Plant* that lasts good for several Years without renewing, and is of great Use.

Dragons ought also to be found in our *Garden*, as well for the Beauty of the *Flowers*, as the Use made of the whole *Plant* in many Cases; it is multiply'd by transplanting the Suckers taken from about the Root in *March*: This *Plant* loves a fresh natural Soil and Shade.

Fennel and *Dill* are both propagated alike from Seeds sown in the Spring; they are useful *Herbs*, and should not be wanting in a *Garden*; the first having its tender Stalks blanch'd like *Sellery* makes a very good Sallet.

Parsley and *Clary* are also very useful Furnitures of a *Kitchen Garden*, both cultivated with great Facility, and rais'd from Seeds sown in *March*, and renewed every Year.

I have now (I think) mentioned every *Plant* that is requir'd to grow in a *Kitchen Garden*, and would advise, that the several Kinds I have treated of in this Chapter be planted in some place near the House, for the Convenience of gathering them with little trouble when they are wanted.

CHAP. VIII.

Of *ENGINES* for raising of *WATER*, with some Observations and Experiments for the meliorating of *Water* for the Use of Gardeners.



AS it is impossible to have either a fine or profitable *Garden* without the Command of good *Water*, I am perswaded this Chapter will not be unacceptable to such Gentlemen as have their *Gardens* unfortunately situated remote from it; but especially if by the Assistance of some *Engines*, which I shall here mention, they may be taught how to bring it, with little Trouble, to their Houses or Gardens, altho' they have their Station upon the tops of Hills, or other Places remote from *Water*.

First,

First, Supposing the Situation of the House or Garden to be a considerable Height above any Pond, River, or Spring, and that it has at present no other Convenience of *Water* than what is brought continually by Men or Horses to it: In this Case the wonderful Invention of the late Mr. *Savory* F. R. S. for raising *Water* by *Fire*, will not only supply the Defect, by flinging up as much *Water* as may be desir'd, but may be maintain'd with little Trouble, and very small Expence. It is now about six Years since Mr. *Savory* set up one of them for that curious Gentleman Mr. *Balle* at *Cambden House*, which has succeeded so well, that there has not been any want of *Water* since it has been built; and with the Improvements since made to it, I am apt to believe will be less subject to be out of order than any *Engine* whatever.

For the Satisfaction of the Curious, I have given a Design of it, *Fig. I.* of the second Plate, agreeable to that at *Cambden House*, which is, I think, the truest proportion'd of any about *London*; the several Parts of it, and the Manner of working it, I shall explain as follows,

A The *Fire*.

B The *Boiler*; a Copper Vessel of a Spherical Figure, in which *Water* is boiled and evaporated into *Steam*, which passes thorow

C The *Regulator*, which opens to let it into

D The *Steam-Pipe* (of Copper) thorow which it descends into

E The *Receiver*, which is a Vessel of Copper; that at first setting at Work is full of Air, which the *Steam* will discharge thorow

F The *Engine-Tree*, and up the *Clack* at

K (The *Plug* of the said *Clack*, to come at and repair the same if need be) and so the Air goes up

L The *Force-Pipe*.----After E is void of Air, which is to be found by its being hot all over, then stop the *Steam* at C, and throw a little cold *Water* on E, and the sucking *Clack* will open at

Plate II

Fig. I.



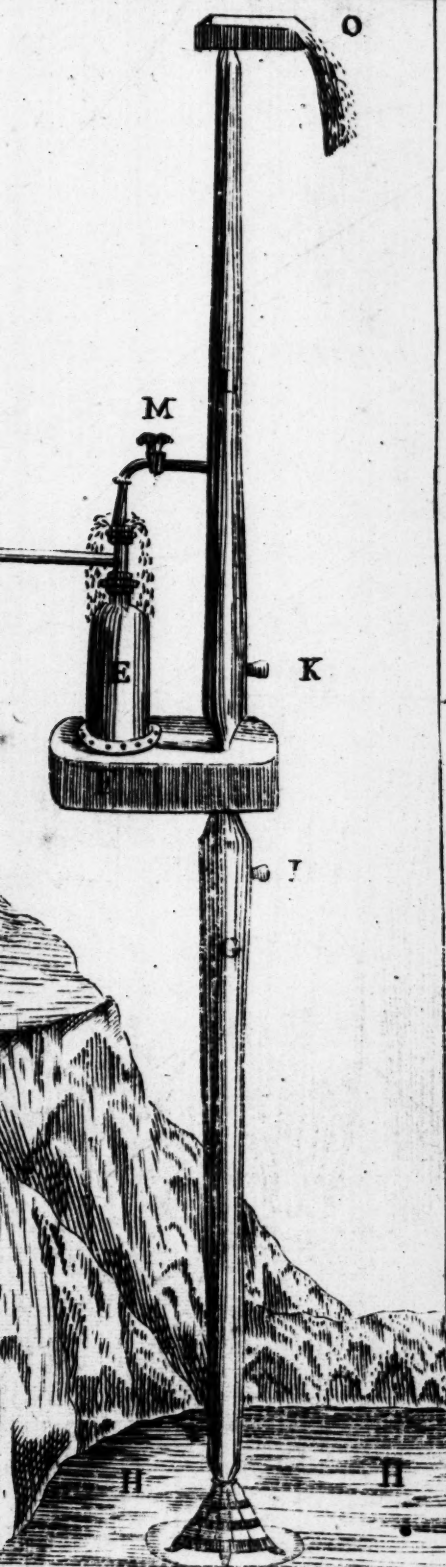


Fig. II.

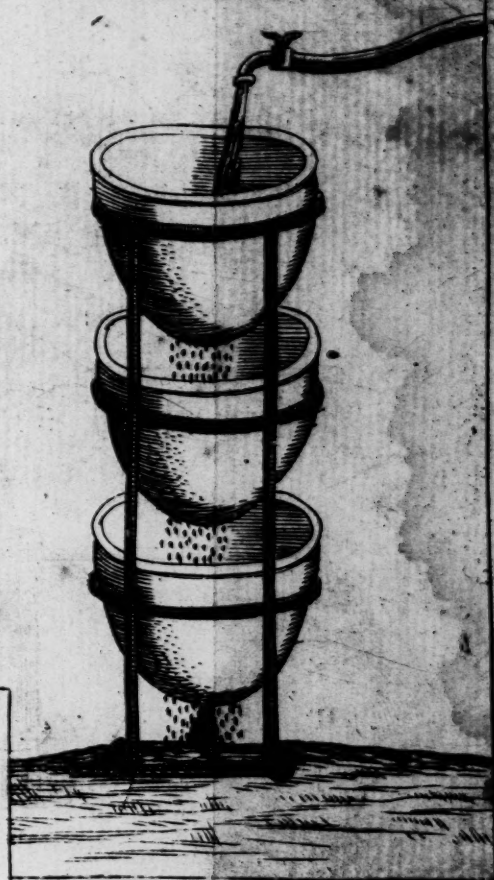
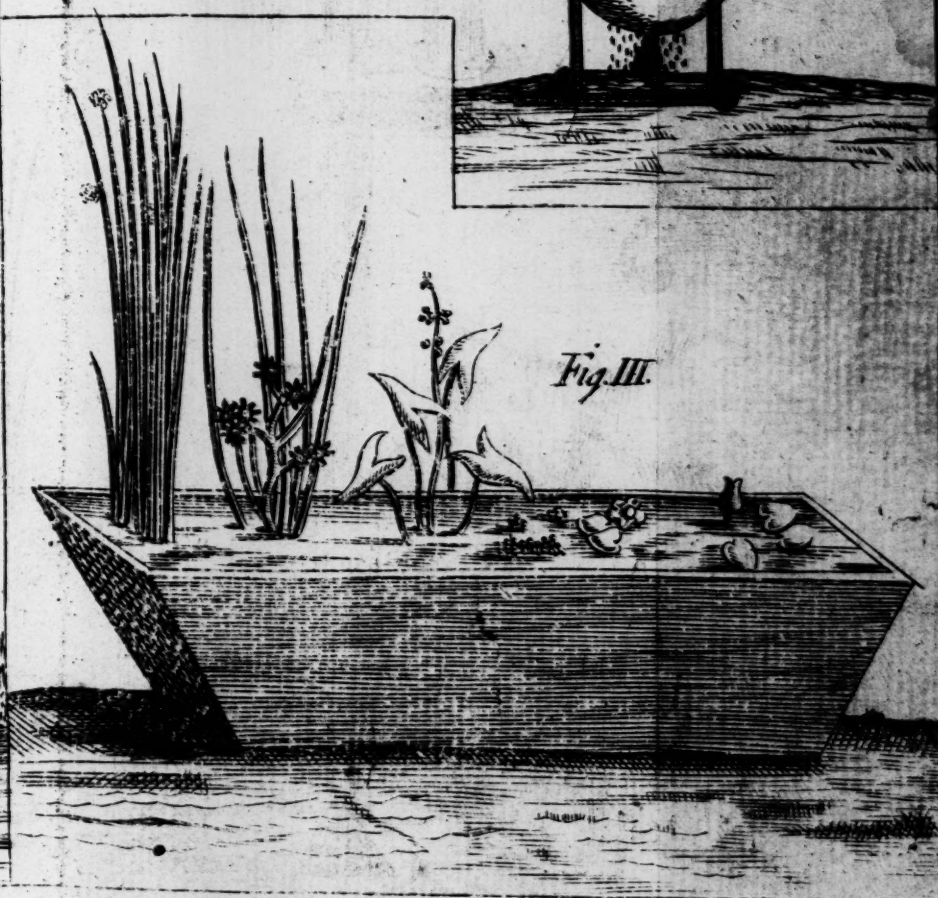


Fig. III.



I (Which is the *Plug* of the said *Clack*) and fill E with Water, which will ascend thorow
 G The *Sucking-Pipe*, from
 H The *Pond, Well, or River*.

This being done, proceed to raise your *Water*, viz.

First, Turn C to let the *Steam* pass from the *Boiler* into E, and it will force the *Water* therein thorow F by K, up L; which *Water* cannot descend, because of the *Clack* at I. When E is thus emptied, which may easily be perceived by its being hot as before, turn C and confine your *Steam* in B; then open the *Cock* M, which will let a little cold *Water* into E, and that by condensing the *Steam* in E, will cause the *Water* immediately to ascend from H, and replenish E.

Then turn C to let the *Steam* into E, and it will force the *Water* out of it up L into a *Cistern* O, placed at the Top to receive it. Then confine your *Steam* at C as before, and turn M for the space of a Second or two of Time, and E will be refill'd, which may be again discharged up L as before: So this Work may be continued as long as you please, if you keep *Water* in B.

If you turn the *Cock* N, and then only *Steam* comes out of it (without hot *Water*) the *Boiler* must be replenish'd with fresh *Water*; but our *Boiler* of *Water* will last a long while.

When you have rais'd *Water* enough, and you design to leave off working the *Engine*, take away all the *Fire* from under the *Boiler*, and open the *Cock* N, to let out the *Steam*, which would otherwise (was it to remain confin'd) perhaps burst the *Engine*.

The Proportion of the several Parts of this *Engine*, as it now stands at *Cambden House*, is thus:

The *Pipe*, from the Surface of the *Water* to the *Engine-Tree* F, is sixteen Foot, which is the length it sucks the *Water* (but might be made to draw *Water* about twenty eight Foot.)

From the *Engine-Tree* F, up to the great *Cistern*, which receives the *Water*, is forty two Foot (but

might be a hundred Foot high, if such a quantity of *Steam* be allow'd as is proportionable to the length of the *Pipe*.)

The Diameter of the Bore, as well of the *Sucking-Pipe G*, as of the *Force-Pipe L*, is three Inches; and of the *Steam-Pipe D* about an Inch.

The *Receiver* holds thirteen Gallons of Water, and the *Boiler* three times that Quantity.

When this *Engine* begins to work, you may raise four of the *Receivers* full of Water in one Minute, which is fifty two Gallons; and at that rate, in an Hour's time may be flung up three thousand one hundred and twenty Gallons, which is above eighty six Barrels: Or if there were two *Receivers*, one to suck, while the other discharged it self, as has been practised, then we might raise six thousand two hundred and forty Gallons in the same time.

The prime Cost of such an *Engine* is about fifty Pounds; and the quantity of *Coal* requir'd for each Working is about half a Peck; so that the Expence will be very inconsiderable, in comparison to what the Carriage of Water upon Horses would amount to, and in such Countries where Wood is plenty, the Expence would be much less.

Now if the quantity of Water, which is here said to rise in an Hour's time, may not be thought enough for the Use design'd, the same *Engine* may either be continu'd, to work for four or five Hours, or another of a larger Extent might be set up. I have seen one with two *Receivers*, which held each of them a Barrel (*i.e.*) thirty six Gallons of Water, which would furnish so great a Quantity, that even some tolerable large Fountains might be supply'd by it.

In the working this *Engine* we may observe two things which contribute to explain the Motion of the *Sap in Plants*; First, We discover the violent Elasticity of *Steam* or *Vapour*, when compress'd or crouded into a little room, as the *Steam* or *Vapour* rising from the Roots of Plants into the fine *Tubes* or *Vessels* in the Wood, has sufficient force to unroll or explain them at their

their Ex
Plant.

this Stea
which
their ex
turns to
receive

The
draw W
Italy and
of deep
Buckets
filling
down w
loose l
should

to ever
As f
sing V
themse
ton-Cou
for ing
Louder
siderab

Wh
Engine
it shou
Pond,
is capa
which
ly as it
of Lea
Water
it may

If it
falling
Receiv
three
receiv
be co

their Extremities, and by that means to enlarge the Plant. 2dly, We may observe the Effect of cooling this *Steam*, it then *condenses* or *thickens* into Water; which I suppose it does in *Plants*, as soon as it reaches their extream Parts and meets the Cold, and then returns to the Root thro' other Passages big enough to receive it, by means of its own Weight.

The *Persian-Wheel* is another *Engine* which will draw Water from any great Depth: It is much used in *Italy* and other Parts of *Europe*, for drawing Water out of deep *Wells* and *Mines*. This *Wheel* has a Chain of Buckets, which in the time of working are continually filling and emptying themselves: Some of them going down while the others are coming up, the Chain being loose like that upon the Wheel of a *Jack*. This I should further explain, if it was not so generally known to every one that has been abroad.

As for other Inventions for the same purpose of raising Water, I shall refer my Reader to the *Engines* themselves, that at *Windsor-Castle*, the Engine at *Hampton-Court*, but above all others that I have yet heard of for ingenious Contrivance, the *Engine* belonging to *James Louder, Esq;* of *Whitehaven*, which I am told is a considerable Improvement upon Mr. *Savory's* Invention.

When by the Assistance of any of these, or other *Engines*, the Water is brought up to the Place design'd, it should be expos'd to the Air as much as can be in a Pond, or other Receptacle of the like Nature, which is capable of containing a large Fund of Water, by which means it will be kept from fermenting so quickly as it would do in small Quantities, confin'd in *Cisterns* of *Lead* or *Wood*; and if it should then happen that the Water is not palatable, or very fit for Household Use, it may be remedied by some of the following Ways.

If it be muddy, or ill-tasted, the Water immediately falling from the Pipe of the *Engine* into the *Pond* or *Receiver*, should first light upon a Bed of *Pebble-Stones*, three or four Foot thick; and the *Pond* or *Basin* it is received into, after it is prepared to hold Water, should be cover'd at the Bottom with the same kind of Stone.

In that part of the *Pond* where the Pipes receive the Water for its Conveyance to the House, should be laid a Heap of the same Stones over the Mouth of the Pipe; and at convenient Distances in the Course of the Pipes from the *Pond* to the House, should be made two or three small *Cisterns*, sunk a Yard in the Ground below the Pipe, fill'd with the same sort of Pebbles, and this Method will purifie the Water to an extraordinary Fineness. The famous *Pisa* Water, so noted in *Italy*, is not without these Helps; but indeed it is observable, that the very Mountain it springs from produces those *Olives* which make the sweetest *Oil* in the World, which probably proceeds from the Nature of the Soil, as the Goodness of the Water also is partly owing to.

But for want of these Conveniencies, we may refine Water another way, as it is frequently practised in *Spain*: They filter it thro' several *Bells* or *Basons*, made of a porous Stone of that Country, somewhat like those dug about *Oxford*. These *Basons* are placed one over another, as in *Fig. II. Plate II.* sometimes five or six, to make the Water as fine as you desire; but for want of these, I think we might use large *Basons* of some sort of Earthen-ware made in *England*, and baked without glazing, which will let the Water pass as freely as the *Bells* of Stone.

If it is too harsh, soften it with *Chalk* and *Gravel*; but above all we must observe, that no Water-Fowl be suffer'd to come near it, nor any Weeds or Fish live in it; and also that it is not annoy'd by Leaves of Trees falling into it.

And these Directions, I think, are not contrary to Reason, if we consider, that the best and the worst Waters are only good or bad, according as they are filter'd thro' *Beds* of different kinds of Earth; all Waters certainly partaking of the Qualities of the Earths they pass thorow, as it were by Infusion: It would therefore be well to observe what Soils the best or most pleasant tasted Springs run thorow, that others may be regulated by them: From such Observations an ingeni-

ous

Man might easily alter the Taste and Quality of any Water according to his own Fancy.

But for the Use of *Gardens*, the most pleasant clear Water is not to be prefer'd, nor such as comes immediately from a cold Spring; neither should it be harsh, but rather soft and muddy: A stagnating Water, that lies well expos'd to the Sun, seems to be the best for the Health of any Plant; or pure Rain Water, if it can be had without any Mixture; for all enriched or fatned Water, with Dungs or other forcing Ingredients, proves often fatal to Plants, if not rightly understood; and at the best can only contribute to make a Plant grow something the quicker; and such forcing of Nature always proves of ill Consequence as well to Plants as to Animals, by shortning their Lives.

Indeed where we have to do only with annual *Plants*, it may be of service to use sometimes these Provocatives, the better to bring them to Perfection within the compass of our *Summer*; but then they must be apply'd considerably, and a right kind of Mixture prepared for each suspected Sort of Plant: For we must not imagine, that one sort of Mixture, however fatning it may be, will alike contribute to the Welfare of every sort of Plant. I have experienc'd, that the black Water taken from a Dunghil, will make a *Cabbage*, or any of that Race, prosper extreamly: But having used the same Water to other Plants that were aromatick, and whose Texture of Parts was more close, such as *Mirtles*, *Thyme*, and the like, it kill'd them very quickly; which shews that the *Gardeners* ought not to confide in the Richness of any one particular kind of Water for the Welfare of every sort of Plant, no more than a skilful Physician will prescribe always the same Medicine for the Cure of all sorts of Distempers.

But there is another thing to be consider'd in the preparing of Waters for Plants, which as yet seems to be very little regarded; and that is, when we mix *Pigeons-Dung*, or other such like Ingredients in Waters, we must allow them due time to ferment before we use them, otherwise they will injure the Roots we water

with them, and that will distemper the Plants, and it may be kill them, as we often find by Experience.

Mr. *Evelyn* very justly observes, speaking of these Mixtures, that they should not be used 'till they be sufficiently sweetned and purged from their over *Acrimony*: I have known many Plants destroy'd by the Use of unripe Mixtures, altho' the same Preparations, when they have been fully matured, have done Wonders in forwarding the Growth of the same Kinds of Plants: And again, the Proportions of every Ingredient ought to be as reasonably consider'd, and not to double our Quantities over hastily, because a moderate Proportion has already begun to shew its good Effects; like some unthinking People, who believe that the more Physick they take, the more healthful they shall be, because they have once been reliev'd from Sicknes by a small Dose of it: But a few Observations to an ingenious Man, who loves a *Garden*, will soon bring him to rights in these Matters.

I find that for *Orange-Trees*, *Sheeps* or *Deers-Dung* steep'd in Water, about half a Bushel to a Hoghead, is of great Use, and may be fill'd up five or six times without renewing the Dung; but this Water must not be used 'till it has stood at least three Days in the Sun for the first time, and about forty eight Hours for the others: And besides, we must likewise be sure to observe, that when we have once begun to make Use of it, it must constantly be continu'd, or the Trees will decline.

I confess I cannot from Experience direct any other prepar'd Water for the Welfare of any particular kind of Plant, but the *Orange-Tree*; but so far as I can judge, those Plants with the largest Vessels, will best endure the fattest Waters: See the Mixtures I mention for forcing Vegetation in the Third Chapter of my First Part of this Work, and infuse them in Water for trial.

But to return to plain Water, which is the most natural to Plants, use only such, if possible, as has stood in the Sun some Days to soften, either in *Cisterns*, or Pits dug in the Ground, but I esteem Pits to be the best;

best; and
heedingl
most pr
of refres
First
ning, in
in the
the first
of Plant
pens to
ven in
Day, i
quire fr
Evenin
Water
March
from t
vening
Heat
the M
sides c
ceive
use th
witho
Bu
to w
the
Earth
bute
shinc
fore
and
as c
com
ther
are
F
cum
sho
sho

best; and even Water of this Kind should not be unheedingly given to Plants. We should consider the most proper Seasons of doing it, and the best Method of refreshing Plants with it.

First then, we ought to water all Plants in the Morning, in such Seasons when the Nights are frosty; and in the Evening in the warm Seasons: The Reason of the first is, that too much Wet lying about the Roots of Plants, chills and pinches them so much, if it happens to freeze, that they often perish; but if it be given in the Morning when there is likelihood of a warm Day, it gives the Plants such Nourishment as they require from it, and is dried up before the Frost of the Evening can have power over it; therefore Morning-Waterings should be in *August*, *September* and *October*, *March*, *April*, and the first fifteen Days in *May*; and from that time to the middle of *August* chuse the Evenings for the same Work, because then the extreame Heat of the Sun would over-heat the Water given in the Morning to the Plants, and scald their Roots, besides drying it up too quick, before the Plants could receive due Nourishment from it: But we should never use these Evening-Waterings after the Sun is down, without great Necessity.

But in either of these Waterings, we should take care to water as near the Ground as can be, and not hold the *Watering-Pot* too high, for that would wash the Earth from about the Roots of the Plants, and contribute to make the Ground hard when the Sun comes to shine upon it, and so bind the Roots too much. Before you water, observe always that the Earth be open and loose about the Roots; and above all, avoid as much as can be the wetting of the Leaves; for if the Frost comes upon them before they dry, it pinches and rots them; and if the Sun shines hot upon 'em while they are wet, they will spot and change their Colour.

Besides these simple Waterings, *Colly-Flowers*, *Cucumbers*, and those Plants which have large Vessels, should be floated, that is, the *Alleys* between the Rows should be damm'd up at each end, and fill'd with Water;

ter; and one of these Floatings will do more good than six Waterings close to their *Stems*; they feed and nourish the extream *Fibres*, which alone want this help, and put the Earth into that Condition, that the smallest Warmth of the Sun will evaporate that Steam from it, which I account to be so necessary to plump the Parenchymous Parts of the Leaves and Stalks.

It is a Rule to be observ'd in the watering of Plants, That while they are not growing they should be kept as dry as possible, and at the time of their Growth they should never want Water, giving them frequently a little at a time, and chiefly at the time they are in Blossom; for if by accident of Weather the Water lies long about the Roots of Plants, it chills them, and checks their Growth. It is also to be observ'd, that such Plants as are very succulent or juicy, as *House-leeks*, &c. must have little Water; they contain Moisture enough in themselves for their Nourishment, and feed chiefly upon the Air, which they imbibe and condense in their spongy Parts, and besides for their Substance they have fewer *Sap-Vessels* than any other Kinds of Plants; therefore I have laid it down as a Rule in my *History of Succulent Plants*, and 'tis from Experience, that the more succulent is any Plant, so does it require less Water; and so those Plants that have the greatest Proportion of *Sap-Vessels*, and the least of spongy Parts, require frequent waterings, which we find to be true from common Experience in the Garden, and by examining the Structure of *Water-Plants*, such as *Willows*, &c. which are for the most part composed of *Sap-Vessels*, and are therefore so tough that they may be wrought into any Figure without breaking; but all juicy Plants are brittle for want of these Vessels.

I believe if we were to examine with the *Microscope* the Numbers and Sizes of the *Sap-Vessels* in every sort of Plant we have a mind to propagate, we might come to a Certainty of the proportion of Moisture every Plant requir'd.

Since I have now given my Remarks upon *Water*, and the manner of using it in *Gardens*, I believe it will not

not be
Accou
ter-Pla
has no
and is

Of W



far t
confi
am p
Plant
if the
ful A
pafs
chief
with
King

N
dens
Spre
ing
cels
wit
el
acc
abo
lon
and
unc
dec

not be unacceptable to the Curious, if I give them an Account of the Method I have used to propagate *Water-Plants* in *Pots* and *Cases*, which hitherto I believe has not been practised in *England* by any but my self, and is what I find to succeed very well.

CHAP. IX.

Of *WATER-PLANTS*, whether Domestick or Foreign, the Manner of Propagating them in our Gardens.



IN the First Part of this Work I have taken some short Notice, that we have *Terrene* Plants, *Amphibious* Plants, and *Aquaticks*; but I shall now be more particular concerning the latter, and endeavour to shew how far the right Disposition of each of them ought to be consider'd when we are about to propagate them. I am perswaded, many curious Persons would have made Plantations of *Water-Plants* in their *Gardens* long since, if they had known how to have done it, as the beautiful *Flowers* of some of them at least equal, if not surpass many of our most curious *Land-Plants*, and that chiefly in the *West-Indies*; altho' *England* has also its Share, witness the *Water-Lillies* and *Ranunculus's* of different Kinds, so frequently found in our *Rivers* and *Ponds*.

Now that *Water-Plants* may have their place in *Gardens*, even altho' there are neither *Ponds*, *Rivers* or *Springs* to plant them in, I shall recommend the following Method, which I have experienc'd with good Success. First, provide either large *Garden-Pots* glazed within side, and without Holes in their Bottoms, or else cause some Troughs or *Cases* of Wood to be made according to the third *Figure*, *Plate II.* of *Oaken Boards*, about two Inches thick; such *Cases* should be six Foot long, two Foot wide at the Bottoms, and two Foot and a half deep, if they are for large *Plants* that grow under Water, or shallower for such as do not require deep Waters; the Corners and other Joints of such *Cases*

Cases should be strengthen'd with Iron, the Insides well pitch'd, and the Outfides painted. In these *Pots* or *Cases* put common unmix'd Earth, so much as to fill one third Part of them, for *Water-Lillies*, *Pond-Weeds*, or such others as require depth of Water for their Leaves and Branches to swim in, and fill about two Thirds of them with the like Earth for *Water-Plantains*, *Water-Aroms*, and *Ranunculus's*, which love less Depth of Water than the former; and for those *Plants* which grow in *Marshes* and *Bogs*, the Earth may lie within five Inches of the Top. This Work may be done in *April*, when the *Water-Plants* begin to appear, which may be brought in and planted from that time 'till the middle of *June*, filling up each *Pot* or *Case* with Water as soon as the *Plants* are put in them. It must be observ'd likewise, that many of the *Water-Plants* are *Wanderers*, without taking any Root in the Earth; such are the *Water-Soldiers*, *Frog-Bits*, and *Ducks-Meat*, which swim about from place to place, as the Wind carries them, and only strike their Roots into the Water; therefore a small quantity of Earth at the bottoms of the *Pots* they are set in, will suffice to maintain the Water in a right State for their Support. In a word, to observe the Mode of Growth, and the Exposure of those *Plants* we collect, will best help us to understand the right way of Cultivating them with Success, when we are about to civilize them in our *Gardens*; where in all things the plain Road of Nature should be follow'd, or at least kept in view, if we desire healthful *Plants*.

I find that in this artificial Management of *Water-Plants*, those of *Rivers* should be frequently refresh'd with Spring-Water, and such as delight to grow in standing *Pools* or *Ponds*, to be seldom interrupted with it. It is also observable, that *Water-Plants*, upon removing them, will be as long before they recover themselves to renew their Growth as *Land-Plants*, which may seem strange to some who are used to see the sudden Refreshment of a decay'd *Land-Flower* when it is put into Water. And whereas it is a common thing to shelter *Land-Plants* from the Heat of the Sun after transplanting, *Water-Plants* must be dealt with directly contrary, and be expos'd to the Sun after they are removed. The

The
Class a
other
Natur
the Se
top of
Seeds
requir
And
ture
on th
has fo
ter-P
either
to th
only
ving
fore
ing t
the
doub
Plan
I sha
Plan
remo
mor
In
no
'till
Wa
low
no
rect
the
the
wit
enc
Par
don
par

The *Seeds* of *Water-Plants* are of two Kinds, one Class always swimming on the top of the Water, and the other sinking to the bottom as it is shed, following the Nature of their Mother Plants in that respect: For if the *Seeds* of those Plants, which naturally swim on the top of the Waters, should sink to the bottom, such *Seeds* would then be removed from the proper Station requir'd for their Growth, and would therefore perish: And so likewise the *Seeds* of those Plants, which Nature directs to grow under the Water, will not swim on the top of it. We may take notice that Providence has so wisely order'd, that in our Climate not any *Water-Plant* is Ever-green, but that they are all of them either Vivacious or Annual, losing their Leaves down to their Roots, or else perishing entirely, their *Seeds* only excepted; for there is no Probability of their living and growing in the frozen Waters; and it is therefore the more necessary I should say something concerning the Preservation of their *Seeds*, to supply us with the several Kinds from Year to Year, which without doubt will produce as many Varieties as the *Seeds* of Land-Plants do every Year; and besides, the Method which I shall prescribe for the preserving the *Seeds* of *Aquatick Plants*, may be useful for the transporting of them from remote Parts, or foreign Countries, which may be done more easily in *Seeds* than in Plants already grown.

In order to save the *Seeds* of these *Plants*, we have no more to do than to follow them from the Flower 'till they are ripe, and then to put them in Earth and Water to preserve them for Vegetation the Spring following, for Nature takes that way, and in this there is no Difficulty. The *Pots* and *Cases* I have already directed, are proper to put them in as soon as they are gather'd; then let them sink or swim in the Water 'till the Spring causes them to sprout, they will prosper with little Attendance; but indeed if we can be happy enough to meet with an ingenious Correspondent in any Part of *America*, where the Waters so generally are adorn'd with beautiful *Plants*, we must contrive some particular Method to preserve them during their Transportation;

portation; and for their Culture when we receive 'em, such as putting them (each Sort by it self) in Bottles of Water and Earth, with large Mouths, cover'd only with Linnen-Cloth, and not with Corks, which would cause a Ferment in the Liquors: Place those Bottles in some Vessel of Water 'till they can be brought to us, and then sow them in the Pots, prepared as I have already directed for *Plants* of this Nature, and place them in *Hot Beds* 'till the Weather with us will nearly answer the Heat of the Climate they came from. At the gathering their *Seeds*, strict Observation should be made of the Depth of Water they grow in, the Situation, the Quality of the Soil under the Water, and whether they inhabit running or standing Waters; and above all, the Taste of the Waters they grow in, whether salt, brackish, or fresh, should be observ'd; by such Instructions I think it will be impossible to fail of the Success we desire.

When we have collected a sufficient Variety of *Water-Plants* into our *Gardens*, we may prepare to dispose them in *Classes*, and range the several Tribes in proper Order, which would be very useful to such as read *Lectures* on *Plants*; for indeed the want of some such way as this for the Cultivating of *Aquaticks* in a narrow Compass of Ground, has given the Students in *Botany* the greatest Trouble in their Studies, and has been the Occasion that *Water-Plants* are so little known. The most proper Season for disposing and removing them is as soon as they are out of Flower, and the Leaves begin to decay, which is about the beginning of *September*; their *Stems* or *Branches* must then be cut off near the Root, and their Roots planted at due Distances in the *Pots* or *Cases* already described.

The *Water-Lillies*, which I so much commend for their Beauty, are of several Kinds; the *Double White*, the *Single White*, and the large *Single Yellow* flowering Sort, which bears a Fruit as large as a *Tennis-Ball*: And besides these, I have heard of smaller Sorts of them in *England*, but have not yet found them; the large Kinds blossom in *June* and *July*; that with the Yel-

low

low
may
Back
but t
River
other

In
Hous
as als
over
any
Camb
that
to co
of th
gate
Vari
usefu
as m

I
be th
from
ter;
us;
far t
spro
Dur
after
Hea
Air

low Flower somewhat sooner than the others: We may find them in quiet Waters, as in a *Pond* at the Back of *Twittenham*, where I have gather'd three Sorts, but the Yellow Sort especially is very plentiful in the River of *Thames* about *Brentford*, where there are many other pretty Sorts of *Water-Plants*.

In the Ditches about *Lambeth*, and near the *Neat-Houses*, *Westminster*, I have observ'd great Varieties; as also near *Hamsted*, and upon the Banks of the *Thames* over against *Greenwich*; but I am told there are not in any Place in *England* so many different Species as in *Cambridgeshire*, which abounds so much in curious *Plants*, that the Famous Mr. *Ray* thought it worth his while to compose a Volume on purpose to describe the Plants of that Country only. So that such as covet to propagate *Water-Plants*, may easily stock themselves with Varieties enough, which I shall never believe are less useful or beautiful, because they are not so high prized as many others.

I shall now say little more upon this Head, unless it be that we must shelter such *Water-Plants* as we receive from foreign Parts, in the *Green-House*, during the *Winter*; for it may be in that Season they will flower with us; if they, like the *Exotick Land-Plants*, preserve so far their natural Season of Growth, that they will only sprout in the Spring-time of their Native Countries. During their Confinement in the House, they must be often refresh'd with Water, somewhat warm'd by the Heat of *Horse-Dung*, or the *Sun*, and allow'd as much Air as possible.





OF THE
GREEN-HOUSE,
AND
Exotick Plants.

CHAP. I.

*Of the GREEN-HOUSE, or CONSERVATORY;
with Directions for Sowing Exotick Seeds, and the best
Method of Gathering them abroad for Transportation, and
the Manner of Packing them up.*



AS there is nothing more difficult in the Management of *Exotick Plants* than the right understanding of the *Conservatory*, where they are to stand in the *Winter*, so I think it necessary in this Chapter to prescribe such Rules for the building and ordering of *Green-Houses*, as I have found to forward the welfare of *Plants*, and as yet has been but little regarded or understood.

The *Green-Houses*, as they are commonly built, serve more for Ornament than Use; their Situation to receive the *South Sun*, is the only thing that seems to be regarded towards the Health of the *Plants* they are to shelter: It is rare to find one among them that will keep a *Plant* well in the *Winter*, either by reason of their Situation in moist Places, their want of *Glasses* enough in the Front, the Disproportion of the Room

within

within them ; and sometimes where it happens that a *Green-House* has been well consider'd in these Points, all is confounded by the *Flues* under it, which convey the Heat from the *Stoves*.

From the Experience therefore that I have had in the Culture of several thousands of *Exotick Plants* in different Kinds of *Conservatories*, I shall venture to give my Sentiments of the Matter.

Beside what is commonly call'd a *Green-House*, it has been customary to provide *Glass Cases* of several Kinds, and *Stoves* for the Preservation of *Plants* brought from different Countries ; but I now find they are so many unnecessary Expences ; a good *Green-House*, well contriv'd, will do all that is requir'd for the welfare of any Plant in the *Winter* : It may be so order'd, as to shelter at one time the *Orange-Trees*, *Plants* from the *Cape of Good Hope*, *Virginia*, *Carolina*, and indeed such as grow within ten Degrees of the *Line*. I must confess, when I was first acquainted with *Aloes*, *Indian-Figs*, and such like *Plants*, I thought they could never have Heat enough, and destroy'd many by that too common Notion : I could hardly venture them out of *Hot Beds* in the most extream Heats of the *Summer* ; and in the *Winter* they were half roasted with subterraneous Fires I had made under the *Glass Cases* where they stood.

But the great Inconveniences I found by that Practice, put me upon making other Trials ; I was soon convinc'd they would live in the open Air in the *Summer* ; and I found that by bringing them acquainted with it in that Season, they became more hardy to resist the Cold of the *Winter* ; they were then vigorous and healthful ; and I had no more to do in the most rigorous Seasons, but to keep them from the Frosts, and so to dispose the *Conservatory*, that when they came to be shut up in severe Weather, there might be Air enough enclos'd in the House to circulate freely about the *Plants*, and dry up those Damps which are at such Times apt to rise from the Moisture of the Pots of the Earth ; for those Damps I found commonly had the worst Effects upon *Plants*, by bringing Moldiness upon their Leaves

or

of Stalks, which always rotted 'em unless timely prevented. To correct these, as well as prevent the Frosts from getting into the House in very violent Seasons, I made Use of a little *Charcoal Fire*, after it burnt clear and had done smoaking, which I hung up between the Windows and the Plants. One of these Fires would keep the Air in the House warm and dry for about twenty four Hours, without renewing; and this Method I found had a much better Effect upon the *Plants* than the subterraneous *Fires*, which commonly rais'd Damps, crack'd the Passages of the *Flues* where it run, and often fill'd the House with Smoak, which is a great Enemy to *Plants*, especially the Smoak of the *Sea-Coal*.

Now altho' I found so much Benefit by *Charcoal Fires* that the last hard *Winter* I did not lose one *Plant*; yet even those Fires are not without their Inconveniencies; where there are many of them, they are so suffocating that several Men have been choak'd by them, upon going into the Places where they have been burning; and if they be not made to burn clear before they are put into a House, the Sparks will fly in such great Numbers from the burning Coals, that the House would be in danger from them of being set on Fire.

These Inconveniencies indeed are enough to lessen our Esteem for *Charcoal Fires*; but it depends upon the Care of the *Gardener* that he avoids those Dangers, by putting into his *Green-House* only a small Fire or two, in proportion to the Bigness of the House, and by taking Care when he puts them in, that they are rather declining than increasing in their Heat.

Since I have seen some of the new invented *Chimneys* so judiciously improv'd by my Learned and Ingenious Friend Mr. *Disaguliers*, F. R. S. I am of Opinion, that nothing can be contriv'd more for our purpose of preserving *Plants* in the *Winter* from Frosts and Damps, than one of them placed artificially in some part of a *Green-House*; they will afford us all that we can desire from any artificial Heat, for the welfare of *Exotick Plants*, without any Inconvenience attending them; and neither the Trouble or Expence of Firing will be near so great

great
tion'd
some
Stoves
ble Ac
it up
altho'
be let
and th
'Confer
have a
placin
By m
be pu
Damp
as we
or the
all th
venti
Plant
of the
liers,
Fr
ough
free f
substa
occa
that
thing
Win
I f
is the
sure
but i
Sout
wou
Con
Can
than
Ran
P

great as in the preparing of the other Fires I have mention'd; and the Expence perhaps not exceed the Charge some have been at in making and continually repairing *Stoves*, which are frequently out of order, besides the double Advantage we may have from one of them, by setting it up in some Room joining to the *Green-House*, where altho' a Fire may be kept constantly, yet the Heat may be let into, or kept out of the *Green-House* at pleasure; and that in such Proportions, as to make the Air in the *Conservatory* equal to the Warmth of any Climate we have a mind to imitate, which we may judge of, by placing a *Thermometer* in some part of the *Green-House*: By means of this Invention, the Air in the House will be put in Motion, kept dry and warm, and correct the Damps; the House will be replenish'd with fresh Air, as we see occasion, there will be no danger of Smoak, or the Charge of frequent Repairs: So that considering all these Excellencies, I cannot conceive that any Invention can exceed this for the Preservation of *Exotick Plants* in the *Winter*. We may see a farther Account of these *Chimneys* in the Book publish'd by Mr. *Disaguiers*, call'd *Fires Improv'd*.

From hence we may judge that a good *Green-House* ought to be situated upon the driest Ground, to be as free from Damps as possible; we ought also to provide substantially for the keeping out of Cold, and yet upon occasion to let in Air freely, but chiefly to contrive that the Front of the House be so dispos'd, that nothing may obstruct the Passage of the Sun's Rays in the *Winter* into the House.

I suppose every one will allow, that the *South Aspect* is the best for a *Green-House*, as it will in that Exposure receive the Sun for the greatest part of the Day; but in case that cannot be had with Conveniency, the *South-West Aspect* is next to be coveted. I think it would be pleasant, as well as beneficial to *Plants*, if the *Conservatory* was always join'd to the Dwelling-House: Can there be any thing more agreeable in the *Winter*, than to have a View from a *Parlour* or *Study*, thorow Ranges of *Orange-Trees*, and curious *Plants* of Foreign

Countries, blossoming, and bearing *Fruit*, when our *Gardens* without Doors are as it were in a State of Death, and to walk among those Curiosities of Nature, as in the most temperate Climate, without any Sense of the Frost or pinching Cold that reigns abroad? And besides, there is this Convenience in the joining the *Conservatory* to the House, that in cold Weather we may go into it without letting in the cold Air, or blighting Winds from abroad, which would injure the *Plants*.

The Situation of the *Green-House* being thus fix'd upon, the Proportions of the Building must next be consider'd, and that chiefly in relation to the Height and Breadth of the Room; for the Length of a *Green-House* may be more or less, according to the Fancy of the Owner: But for the better Admission of the Sun's Rays to pass all over the House, the Breadth of it should not be more than the Height from the Floor to the Ceiling, which may be from ten to eighteen Foot.

The Walls towards the *North* and the *East* must be of a good thickness, but the Front towards the *South* should be all of *Glass*, excepting a low Wall about a Foot high from the Ground; there ought to be no Peers of Brick-work or Timbers in the glazed Part, for they cast more Shade into the House, in Proportion to their Bigness, than it can receive Light thorow the *Glass*; and every one that understands *Exotick Plants*, I'm sure will allow that they should have all the Advantage of the Sun's Rays in the *Winter* that they can possibly receive; and for this End it would be useful in the colder Parts of *England* to build the Front of the *Green-House* in a Sweep, after the Fashion of a Semi-circle, which would then receive the Rays of the Sun from the Time of its rising, 'till it sets.

The *Glass* in the Front, whether it be in *Sashes* or *Casements*, must be so contrived, that it may either be made to slide quite below or above the Frames, or to be taken away as there is occasion to give Air to the *Plants*, which for about a Fortnight or three Weeks after they are set into the House, and as long before the *Plants* come abroad should be quite open Night and Day, if

the

the Frosts or blighting Winds are not abroad ; but at other Times, while the *Plants* are within Doors, all the *Glass* should be put up, and only open'd with Discretion in the Day-time to air the *Plants* : The *Sashes* or *Casements* being open'd, more or less in proportion as the Weather is cold or warm, and should be always shut close again before the Sun is off of the House, that the Air in it may keep warm 'till the next Day. Some have practis'd with good Success to lay the Windows of their *Conservatories* sloping about ten Inches; but as far as I have experienced, they will do as well upright. The Door should be in the middle of the Front, and at least four Foot wide, to admit large *Plants* ; it should be glazed like the Windows.

To these we must provide strong Shutters, at least an Inch thick, which in the *Winter* time should be shut every Night for fear of Frosts, and also in extraordinary cold Weather, when violent Winds blow right against the House.

For the better Security of the *Plants* from Cold, a Place for the laying up the Gardener's Tools may be built at the Back of the *Green-House*, and over it a *Fruiter*y, or *Seed-Room*; or in the lieu of the latter, fill the Roof full of dry Straw.

The best *Pavement* is that made with square *Tiles*, which sucks up Wet quickly, and never sweats as *Marble*, or such Kinds of hard Stone usually does : And for the Lining of the Walls, nothing is preferable to the *Dutch Glazed Tiles*, which are soon warm'd with the Sun, and reflect a great Heat into the House.

A *Green-House* being built answerable to these Directions, after it is well dry'd, may receive Plants into it; but nothing injures them more than to set them into a damp House. In the placing them in the House, we must observe the following Particulars.

It is commonly practis'd to provide Rows of Shelves placed one higher than the other, from the *East* to the *West* End of the House; these should be made to hold as many Pots with Plants as will fill up about one fourth of the Space in the House, leaving the rest for Air to

circulate about the Plants when they come to be shut up close in frosty Weather: For if the House was to be crowded with Plants in the *Winter*, their too great Numbers would create Damps, by condensing the Air in the House; but a Quantity of Plants proportionable to the Space of the House, as I have already hinted, cannot over-power the Air in it, so far as to produce those Damps. It is observable, that in Countries which abound in Wood, great Rains are very frequent, which seems to inform us, that the cold Nature of the many Trees there growing, and also the coldness of the Earth under the Trees condense the Air, and by that means breed Rain more than other places that are not overburden'd with Woods.

In the disposing of the Shelves in the *Green-House*, I allow one Third of the Floor for them to stand upon; one Third from the first Shelf to the Windows, and as much from the last Shelf to the Back of the House; so that we may walk round the Plants, which being placed in the middle Line of the House, are safe from the extream Cold, which is generally nearer the *Walls* or *Glasses*.

Between the Windows and the first Shelf, at one End of the House, should be built the *Chimney* for warming the Air, and the Heat made to come from it into the House, about a Foot above the Floor, which will rise afterwards, and spread it self over the whole. Near the place where this Heat comes in, place the most tender Plants; and by degrees, at greater distance from it, the most hardy. We may best judge of the Nature and Temper of Plants, by consulting what Climates they were brought from; as for Example, those which come from Countries near the *Line*, must have the warmest place; if they grow on this side the *Line*, their Spring begins about the same time with ours; but if they were brought from the *South-Side* of the *Line*, then their Spring begins about *August*. All Plants of the *Cape of Good-Hope*, and other Parts beyond the *Line*, such as *Aloes* of those Countries, *Ficoides*, and such like, flourish most with us from *August* 'till the End of *November*,

Novem
Growt

All
raise in
the Ai
up, for
they a
there v
they h
the Tr

I ob
Seeds b
and fr
tender

Houfe
Additi
them,

Pla
those
us fro
sons a
of Lat

Londo
Clima
three
tick P
ing,
his G
out S

Th
is abo
of M
brou
gene
must
not
ginia
the
abro
'till

November; 'till the Cold of our *Winter* checks their Growth.

All seedling *Plants* from hot Countries, which we raise in the Spring upon *Hot Beds*, should be used to the Air as much as possible when they are once come up, for else they will hardly stand the *Winter*, tho' they are set in the warmest part of the *Green-House*; but there will be little Danger of losing any of them after they have been preserved twelve Months, and have had the Trial of all our Seasons.

I observe that the *Plants* which I have raised from *Seeds* brought from *Jamaica*, *Barbadoes*, *St. Christophers*, and from others of the *Caribbe-Islands*, are the most tender, and hard to be kept: But I am perswaded a House built after the manner I have directed, with the Addition of one of the *Chimneys* I mention, would keep them, or any other, with very little Trouble.

Plants from *China* are indifferently hardy, as well as those from *Persia*; and I find that most of those brought us from the *North* of *Carolina* and *Virginia*, whose Seasons are but a little earlier than ours, and the difference of Latitude not more than twenty five Degees South from *London*, may be naturalized without Difficulty to our Climate, after they have been shelter'd for two or three *Winters* with us: Witness that Wilderness of *Exotick Plants* which that wise Encourager of Natural Learning, the late Bishop of *London*, caused to be planted in his Gardens at *Fulham*, and have prosper'd so well without Shelter for several Years.

The Time for setting *Exotick Plants* into the House is about the second Week in *September*; and the middle of *May*, if the Frosts are pass'd, they are commonly brought out of the House: But altho' this is become a general Rule (in a manner) among the *Gardeners*, we must yet take this Caution with us, that all *Plants* are not alike tender; *Orange-Trees*, and most *Plants* of *Virginia* and *Carolina* are indeed rightly set in and out of the *Green-House* at those times; but *Myrtles* may come abroad sooner by fifteen Days, and remain out of Doors 'till the middle of *October*. Again, *Aloes* should not be

brought out of the House 'till the first Week in *June*, and set in again about the last Week of *August*; and such *Plants* as live nearest the *Line* should yet be more confin'd to the House than any I have yet mention'd: But concerning the Housing and Bringing abroad of all sorts of *Exotick Plants*, we must be sure to observe this General Rule, *i. e.* that they must be perfectly free from Wet on their Leaves and Branches when they are set into the House; and we must always bring them abroad, if possible, with the Advantage of a gentle Shower, to wash and refresh their *Leaves*.

It next follows that I describe the Manner of raising *Exotick Plants* from *Seeds*, and that should be done in this manner; When by Means of Correspondents in Foreign Countries, or the Help of Curious Persons at Home, who have by their Industry collected the *Seeds* of Foreign Novelties, we are provided with a Collection of *Seeds* from any hot Country, we must presently prepare a *Hot Bed* for them; and while it is settling it self for Use, sow the *Seeds* in *Pots* separately, marking every Sort, that when they begin to come up, we may the better know what we are to expect. When they have made their first *Leaves*, plant them out in other *Pots*, and give them a fresh *Bed*, when the first is cool, and as soon as the second begins to decay, use them to the Air in the Day-time, to harden them for the *Winter*: If by chance all the *Seeds* we sow do not come up, keep the *Pots* they were sown in 'till the Spring following in the *Green-House*; for many *Seeds* will lie in the Ground 'till the second Year without sprouting, as I have often found, and they always prove to be *Trees*.

And that we may with the more Certainty propagate such *Exotick Plants* from *Seeds*, I think it may not be amiss to consider the most proper Method of Gathering them in Foreign Countries, and packing them up for Transportation, that what *Seeds* we receive from Abroad may not lose their *Germinative Faculty* before they come to us, or be destroy'd by *Insects*, which often happens.

I would advise then, that all *Seeds* gathered abroad, which are design'd for Transportation, but especially if they are to undergo a long Voyage, should be cut from the *Plant*, with part of the *Branch* they grow upon, a little before they are going to shed or drop from the *Plants*, and in that manner laid in the *Sun* to dry thoroughly before we offer to pack them up, for the least Moisture will rot the *Seeds*: All *Beans*, *Pease*, and Coddled *Fruits* should remain in their *Seed-Vessels*, which will afford them some Nourishment, and preserve them from the Injury of the Sea Air, which is pernicious to *Land-Plants*. *Fruits*, such as have a *Pulp* or *Flesh* over their seed, should be dry'd, with their *Flesh*, and the *Stalk* or Part of the *Branch* they grew upon adhering to them; for Nature has provided proper Coverings for every Seed to defend it from Injuries, and for its Nourishment, 'till it is fit for the Ground: At the Gathering of every *Seed*, Notice should be taken of the Soil, and the Situation, whether *Sand*, *Loam*, *Clay* or *Rocky*; the Side or Top of a Hill, whether Boggy-Ground, either expos'd to the Sun, or in shady Places, if under Trees, or in Plains; this is so very material, that I know some *Plants* will not grow any where but in Woods, and there only under particular Kinds of Trees, as some of the *Orchis* Kinds for example, which I have often try'd to propagate in my *Garden* to little purpose. When a sufficient Collection of *Seeds* is gather'd, and well dry'd, put each Sort by it self into Paper, with its Description, Time of Flowering, the common Names they bear among the Country People, and the Use they make of each Kinds; then put the Papers close together into *Glass-Vessels*, or Stone or Earthen Pots well glazed, and stop'd down close, with Pitch or Rozin melted over the Corks or Stopples: These being so order'd, should be put into a Box, filling up the Spaces between them with dry Sand; and then after the Box is well secured, set it in some dry place of the Ship.

The smallest Kinds of *Seeds*, and such as are of the least Substance, should be put into dry Sand, in separate

rate Parcels, according to their Kinds, for otherwise they would shrink for want of Air, which they should, as much as possible, be debarr'd from while they are upon the Sea. All bulbous Roots should be taken out of the Ground when their Flower-Stalks begin to decay; and when they are well dry'd may be pack'd up with dry Sand in Glass or Stone Vessels.

But if it could be compass'd to send over *Plants* already growing, plant them four or five Inches asunder in Boxes, having first pruned off their Branches; between them plant the bulbous Roots, and over the whole sprinkle some *Seeds* of the smallest Kinds, and then make a Cover of Hoops or Lattice-Work to put over the Box, which will defend the *Plants*, while they are at Sea, from the *Rats*, and give a free Passage for the Air and the Sun to come at the *Plants*. And to be yet more certain of their Welfare, an outside Case of Boards, nail'd close together, may be made to put over the Box in hard Weather, to defend the *Plants* from the Sea-Water: These Boxes should not be very deep, lest they hold the Wet too long about the Roots of the *Plants*: To avoid which, there should be Holes at the Bottom for the free Passage of the Water, which the *Plants* should have in small Quantities when the Earth began to dry, which perhaps may be in twenty four Hours in some Climates, and not in three or four Days in others. *Plants* pack'd in this manner should stand upon *Deck* if possible.

Thus having laid down the General Rules for the Ordering of a *Green-House*, and the *Plants* to be shelter'd in it, I shall in the next place proceed to give particular Directions for the *Culture* of such Kinds of *Exotick Plants* as merit most our Pains and Admiration.

CHAP.

CHAP. II.

Of ORANGE and LEMON-TREES, and their Culture.



HERE is little difference in the manner of ordering the *Orange* and *Lemon-Tree*; and seeing that these Kinds of *Plants* are so beautiful in every respect as to merit an universal Esteem, I shall therefore be more curious to lay down such Rules for their Management, as may every way contribute to their Improvement; and first of *Orange-Stocks*, which are brought from *Genoa* and other Foreign Parts.

The most proper Season for the Importation of *Orange Stocks* into *England*, is in *February*; so that at least there should be a Fortnight in that Month to prepare them for Growth, that their Shoots may be strong and vigorous the succeeding Summer. When we receive them from Abroad they have very little Root, and less Branches; and as they have commonly been laid up in that Condition in dry Boxes for some time before we receive them, they require no small Care to recover them from their Lethargy. I first advise that they be laid upon wet Moss, in some large Room, where they may have the Advantage of as much Air from abroad as may be (provided if it be not sharp) in the Day-time only for about a Week; this Method, if they are turn'd once in twelve Hours, will recover their shrunk Vessels, and swell their Bark; then their Roots must be examin'd, and their wounded and dead Parts cut off with a very sharp Knife; and of the Earth about them, if they have any, very little taken away; their small remaining Tops must likewise be prun'd off, leaving only such Shoots as are vigorous about three or four Inches long, and all the Wounds of them closely plaister'd over with soft Wax: In this State their Roots must be laid in River or Pond Water for about twelve Hours, and set to drain for about half an Hour after they are taken out, before they are planted.

The

The Pots for these Stocks must be just big enough to admit of two Inches thick of the following Earth on every side their Roots and no more, lest the Warmth of the *Hot Bed* they are to be set into, has not strength enough to reach them and make them strike, for the *Hot Bed* must be very moderate and gentle, lest the Roots are scorch'd, and then it will be to little purpose ever to attempt the Recovery of the Plants.

The Earth which I have made use of with success was one third part of rotted Wood, one third of fresh sandy Loam, and as much *Melon-Earth* well mix'd and sifted together; this Soil I always found to make my Trees prosper and produce excellent Fruit.

The Stocks being in this State, their Pots should be set upon a *Hot-Bed* prepared as directed in *Chap. I.* of the *Kitchen-Garden*, when the great Heat is past, after the whole Surface of the *Bed* is cover'd with Mold, to prevent the Steam of the Dung rising and annoying the Plants.

This *Bed* should be made under a warm Wall, and shelter'd from the cold Air with Glass on the Sides and on the Top: The *Plants* being thus prepar'd for Growth, must be moderately water'd about once a Week 'till *April*; and then, if the Weather be very warm, every third Day. It is also to be observ'd, that at all such times as the Sun shines warm upon them, their Tops must be shaded with *Mats*, lest the tender Shoots, which began to put forth, be scorch'd, and by that means perish.

In *May*, when their Shoots begin to show their Vigour, it will be necessary to give them Air by degrees, by opening the Glasses towards Sun-set, if the Evenings are not too cold; this, if it be done judiciously, will contribute to strengthen them, and make them shoot green and healthy. During the Course of their first Shoot they must be shifted every six Weeks at least, into fresh *Hot-Beds*; but as soon as *June* is past, I would not then advise any more Forcing, but rather endeavour to prevent them from setting out a second Shoot, by exposing them at large to the open Air in

some

some p
main 'ti
into th
ches o
careful
as muc

The

Habita

them,

the W

during

be ver

when

be let

Th

perish

ly refi

about

Plant

Water

thy.

will l

yellow

for a

any S

these

his m

of Fe

the

Plan

cedin

Prop

Wo

they

and

are

befo

I

Mia

And

some place shaded from the *Sun*, where they should remain 'till the first Week in *September*, and then be carry'd into the *Green-House*; at which time, three or four Inches of the Earth on the top of their Pots should be carefully taken away, without injuring the Roots, and as much fresh Mold put in its place.

The *Orange-Trees*, being thus seated in their *Winter Habitation*, should have as much Air as possible allow'd them, Night and Day, 'till the latter End of *October*; the Windows of the *Green-House* should never be shut during that time, unless the Winds or Frosts happen to be very severe; and in the following *Winter-Months*, when the Weather is moderate, no Opportunity should be let pass of opening the House.

These *Trees*, altho' they love the Shade, yet quickly perish if they have much Water; let them be frequently refresh'd with it a little at a time, lest too much Wet about their Roots chill or rot them, and destroy the *Plants*. I find that *Sheep* or *Deer Dung*, steep'd in the Water for *Orange-Trees*, contributes to make them healthy. The Effect which violent and hasty Waterings will have upon these *Trees* will be, that the Leaves turn yellow, and often drop off; and above all will remain for a Year or two languishing, without putting forth any Shoots, and at length entirely go off. Now if by these, or some better Directions, a *Gardener* maintains his new *Orange-Trees* in good Health 'till the latter End of *February*, let him then renew the Earth as he did in the fore-going Autumn, and trim the Heads of his *Plants*, leaving six Inches or thereabouts of the preceding *Summer-Shoots*, if they be strong, or less in Proportion, as they are otherways, plaistering the Wounds with soft Wax, as I have before directed; they will, after this Operation, soon begin to sprout, and make good Shoots the *Summer* following, if they are discreetly made acquainted with the External Air before they are set out of the House.

It is commonly practis'd to bring them abroad about *Mid-May*, especially if moderate Rains fall at that time: And I have known it laid down as a Rule, to set them out

out of the House when the Leaf of the *Mulberry-Tree* is as large as a *Crow's Foot*, which perhaps may be a certain Sign of the settled Temperature of the Air. I have indeed my self had little Regard to either of these Rules, but have chiefly trusted to the Time of the *New Moon* in *May*, which I observe commonly brings gentle Showers, and warm Weather.

For the *Summer* Station of these *Trees*, it is advisable to provide some shady place in the *Garden*, either by fencing it in with Hedges of *Dutch Helm*, *Hornbeam*, *Holly*, or *Evergreen Oaks*, about twelve or fifteen Foot high, or else to clear some place in the *Wilderness* or *Wood* to set them in, such as may be seen at the Right Honourable the Earl of *Essex's* at *Cassioberry*, and some other Places; for in such Shelter this *Plant* delights exceedingly. With this way of Management we may expect handsome *Trees* in three Years from their first Planting, minding to change their Pots as the Roots increase in bigness; which Work is best done in *February*: And let the *Gardener* take this Advice along with it, that he always plant these *Trees* so shallow in their *Pots* or *Cases*, that none of the *Stem* be set below the Earth, but rather let some of the large Roots joining to the *Stem* be seen above it; and also that the Pots be not too large, for then the Roots would chill, by having too much Moisture about them.

The third *Summer* after planting, the *Trees* will begin to blossom, and if they are in Health will set Fruit, which will be as big as a *Musquet-Ball* when they are put into the House, and ripen the *Summer* following. No skilful *Gardener* will ever covet great Quantities of Blossoms, as they are certain Signs of Weakness, and a Fore-runner of Decay, unless timely prevented by pruning many of them off as soon as they begin to appear.

That great Encourager of Ingenuity, the late King of *France*, was so great an Admirer of this *Tree*, that he continually had Rows of them flowering in a Gallery of the *Louvre*; they were placed upon *Pedestals*, with Cases of emboss'd *Silver* over their Pots. I leave my Reader to imagine the Pleasure of such Furniture, which was never wanting as well in *Winter* as in the *Summer*.

The

The M
Season
ber of
main w
then gi
and fre
full of
were t
throug
in the
The
Tree,
somew
of the
we me
Thoulo
forty
the R
Sea,
of the
are as
of the
from
South
in the
Th
a ver
Sort
shall
most
Oran
Beau
whic
Oran
clin
fecti
plea
the
Leav
but
Use

The Manner of bringing the Trees to blossom at every Season was thus; after the *Gardeners* had chose a Number of Trees sufficient for their Use, they let them remain without Water 'till their Leaves drop'd off; and then giving them fresh Earth on the Tops of their Pots, and frequent Waterings in a Glass-Case, they came out full of Flowers and fresh Leaves, fit for the place they were to stand in; these they renew'd every Month throughout the Year; and the like Curiosity was also in the Palace of the Prince *di Burgesi* in *Rome*.

The Situation and Climate natural to this beautiful Tree, may be consider'd in the next place; and may somewhat help us to judge of the Temper and Nature of the Air it requires: The first Groves of them that we meet with growing wild in *Europe*, are at *Eres* near *Thoulon* in *France*, which is between forty two, and forty three *Degrees Latitude*; and about *St. Remo*, and the *Riviera* of *Genoua* in the same *Latitude*, near the Sea, at the Foot of very high Mountains to the *North* of them; and the first Woods of them growing in *Italy*, are as far *South* as *Gaietta*; and so agreeable is the Air of the Sea to them, that in many Places more remote from the Sea than *Thoulon* and *Gaietta*, altho' farther *South*, they cannot be made to thrive without Shelter in the *Winter*.

The various Kinds of *Oranges* and *Lemons* would make a very considerable Article, if I was to mention each Sort in particular, and indeed would be of little Use; I shall therefore only mention some few which are the most common in our *English* Gardens. The *Civil-Orange* is, in my Opinion, the best, as well for the Beauty of its *Leaves*, as for the Goodness of its Fruit; which will come to Maturity with us. The *China-Orange* never makes a handsome Tree, but is always inclining to look sickly, and seldom bears Fruit in Perfection. The *Curl'd Genoua Orange* is somewhat more pleasant to the Sight, but is a very slow grower: And the *Strip'd Genoua*, for the beautiful Variegations of its Leaves, may well enough be introduced as a Rarity; but for its Fruit I have never yet seen it fit for any Use.

The

The *Portugal Lemon*, and the *Lime*, bear good Fruit, which will ripen so well with us, that I have gather'd as good from my own Trees as any that have been brought from abroad: Some *Citrons* and *Shadocks* have by chance ripen'd in *England*, but they are hardly worth our Trouble: However, if in any Collection they happen to be found, the *Gardener* ought only to observe, that as they, and all the *Lemon Race* will grow much quicker than *Oranges*; so their Pots or Cases ought to be larger, and their Watering more frequent; to which I shall add, as a certain Rule, that pruning their Branches must be avoided, as much as possible; for I have known several Trees spoiled by it.

Now altho' I have given Directions for the Management of large *Orange-Trees*, which are brought us from Foreign Parts, and have, by means of the Method I have laid down, eat very good Fruit, which they have produced; yet I find by Experience that the *Orange-Trees* raised in *England* from *Kernels*, are more hardy, and will bear Fruit with more Certainty, and in much greater Quantities, with less Trouble; and therefore I shall inform my Reader of the Method which I practise to raise them from Seeds.

In *February* I prepare a *Hot Bed*, in which (as soon as the burning Heat is past) I place several Pots fill'd with light dry Earth, and sow the Seeds of *Oranges* and *Lemons* in them, about an Inch deep, where they will remain about ten Days before they appear above the Earth; give them little Water 'till they come up, lest you rot the Seeds; for when they are taken fresh from the Fruit, the outward Membranes, which enclose the Seeds, are always cover'd with a kind of *Mucilage*, which will remain moist for several Days, and is sufficient, with the addition of a small Heat, to make the Seeds sprout, as an Observation of the Curious Mr. *Anthony Van Leeuwenhoek* sufficiently proves. He says that he took a little *Copper Box*, and put some Sand in to it, which for its whiteness, and because it is used to scour *Tin*, is call'd *Scouring-Sand*. He adds, this Sand was very dry of it self, but was somewhat moisten'd by the

the See
of an C
Box sh
and at
which
sixth I
already
and fr
them
of Mr
greate
vours
their
ches,
minat
Parts
tiona
ted in
mark
287.
Bu
Sow
for
eithe
as w
King
Gro
will
of t
five
and
seen
beer
tog
mul
Cor
I h
the
Gar
me

the *Seeds* he put into it, having newly taken them out of an *Orange*; this he did in *November*, and carry'd the *Box* shut close in the Day-time in his Watch Pocket, and at Night had it put in a Vessel of hot Water, by which Means the *Box* was constantly kept warm: The sixth Day he open'd it, and found that the *Seeds* had already put forth *Roots*, near half an Inch in Length; and from time to time, as he review'd them, found them increase and put out Branches. This Experiment of Mr. *Leuwenhoek* indeed was made by him for a much greater End than what I now use it for: He endeavours to prove by it, that every Part of a *Plant*, as well their *Leaves*, *Flower* and *Fruit*, as their *Roots* and *Branches*, are all contain'd in the *Seeds*; and that their Germination is only the filling and explaining the minute Parts wrapt up in their *Seeds*, and not from any additional Parts they receive from the Earth they are planted in. But see this Curious Gentleman's further Remarks on this Head, in *Philosophical Transactions*. Numb. 287.

But to return to my Design; I would rather advise the Sowing of *Lemon* or *Citron-Seeds* than those of *Oranges*; for since neither of them will bear Fruit 'till they are either grafted or inoculated, and the *Lemon-Stocks* will as well receive the Buds of *Oranges* as those of its own Kind, they should be prefer'd for the sake of their quick Growth and hardy Constitution. Now as these *Seeds* will rise at least four Inches high during the Warmth of their first *Hot-Bed*, let their Pots be shifted every five or six Weeks into fresh *Beds* 'till about *August*, and then begin to harden them for the *Winter*. I have seen *Lemon-Plants* rais'd after this Manner, that have been near three Foot high the first Year; for growing together in little Groves, each *Plant* has a kind of Emulation to over-top the rest, as if they knew the ill Consequence of superior *Plants* dripping upon them. I have already hinted how much Shade contributes to the Growth of *Plants*, but shall once more re-mind the *Gardener* to defend these young *Plants* from the hot Summer's Sun, and give them Air only Mornings and Evenings.

The

The *February* after they are raised they should be transplanted into small Pots, and be put again into a *Hot-Bed*, 'till the Season is sufficiently warm to set them abroad; and in *July* some of them will be fit to *Inoculate*, and the rest to *Inarch* the *May* afterward.

The most proper Season for *budding* these *Trees* is about the tenth of *July*; at that time the *Buds* will readily grow; and the following Spring all the wild Part of the *Plants* above the *Buds* being cut off, and the Wounds cover'd with soft Wax, we may expect a good bearing Shoot of a Foot long at least, before *Winter*, if they have the help of a *Hot-Bed*; and in two Years afterward they will begin to bear Fruit if they are well look'd after, and are not over potted.

But *Inarching* them is yet a much quicker way to make them bear both *Flowers* and *Fruit*; this Work is done in *May*, and by the latter End of *August* following, they may be cut off; they will then have Fruit upon them, either green or ripe, as you made choice of bearing Boughs to inlay into the wild Stocks. I have heard of *Trees*, that in less than two Years, from the sowing of the *Seeds*, has had *Fruit* upon them by this Means; and I have my self raised an *Orange-Tree* after this manner, that had *Fruit* and *Flowers* upon it when it was not six Inches high. Mr. *Fairchild* at *Hoxton*, by a peculiar Method he has in performing this Work, has now some hundreds of little *Orange* and *Lemon-Trees*, with *Fruit* upon them as large as any that is brought from abroad.

As I have now given such Directions for the Management and Improvement of *Orange* and *Lemon-Trees*, as I have my self practised with good Success, I doubt not but such as are cultivated by these Rules will not be less vigorous and healthful: And for some Particulars relating to the preserving them from Frosts and Damps in the *Winter*, see the foregoing Chapter of *Green-Houses*.

CHAP. III.

Of MYRTLES, JESSAMINS, and GERANIUMS,
their Culture, &c.



WE have many sorts of *Myrtles* in our *English* Gardens, distinguish'd by the following Names: Those with the largest Leaves are the *Orange-leav'd Myrtles*, the *Spanish Broad-Leaf*, the *Portugal-Myrtle*, the *Nutmeg-Myrtle*, and that with the double Blossom: Beside which, we have the *Nutmeg-Myrtle* with variegated Leaves, which is accounted a Rarity.

Those with smaller Leaves are the *Upright-Myrtle*, the *Silver-leav'd Myrtle*, the *Box-leav'd* and *Birdsnest-Myrtles*, and the *Rosemary* and *Thyme-leav'd* Kinds. All these, except the *Orange-leav'd Myrtle*, and that with the double Blossom, are very easily propagated by Cuttings; but those two Kinds are much better encreas'd from *Layers*.

The most proper Season of laying *Myrtles* for Encrease, is in *May*, when the youngest Shoots only, such as are tender, should be bent into the Earth after it is well stirr'd; and those, if they are often refresh'd with Water, will strike Root, and be fit to take off from the Mother Plants the Spring following; but if we lay down Shoots of a Year old, they will never strike Root with all the Art you can use: So we must likewise observe, that the Cuttings we design to plant should always be young and tender, such as we find upon the *Myrtles* in *July*; 'tis then the most proper Season for planting them, stripping off the Leaves two Inches from each Cutting, and setting them that depth, about an Inch a-part, in Pots of fine light Earth, watering them frequently 'till they have taken Root, which will be about the latter End of *August*. This young Plantation should remain 'till the second *March* before they are transplanted into single Pots, for to remove them sooner would endanger them, because then their small tender

Roots would not be sufficient to draw away the Moisture of the Earth about 'em so quickly as one would wish, and then it would chill the Roots. However, when they have once got large Roots, they delight in Water, and should be frequently refresh'd with it: They covet the Shade in the *Summer*, and will by means of that Help make much stronger Shoots than those that are expos'd to the *Sun*.

About *Mid-April* such old Trees as have been neglected and have thin Heads, may be pruned about the Roots, and fresh Earth put to them, and have the Branches of their Heads cut within three or four Inches of the *Stem*: Being thus order'd, they will prepare for shooting by that time they come abroad, and make handsome Plants that Summer, if they have Water and Shade enough.

The *Myrtle* delights so much in Moisture, that I have known a Pot of it set in a shallow *Bason* of Water, within side of a Window expos'd to the *South*, that has shot above four times as much in one Summer as any that have stood abroad, and has continu'd growing at that extravagant rate for some Years, without renewing the Earth in the Pot, by only taking care to supply the *Bason* with fresh Water as it wanted; but the Shoots of this *Plant* were very slender.

In disposing of these and other *Plants* in the Shade, we must not suffer any Trees to drip upon them, or confine them in too close a place, they must have the free Air round about them and above 'em, or else the Shoots they make will be slender and weak.

The next *Plant* I shall take notice of is the *Jasmin*, of which we have many sorts which will not bear the Cold of our Climate, and are therefore shelter'd in the *Conservatory* during the *Winter*: They are the *Spanish-Jasmin*, the *Portugal-Jasmin*, the *Indian-Jasmin*, the *Arabian-Jasmin*, one sort with single white Flowers, the other with double Blossoms; and the *Coffee-Tree*, which is another Kind of *Jasmin*, blossoming at *Autumn*: Besides these, there are many other Kinds in the *Amsterdam Gardens* which would be too tedious to mention.

The

The *Spanish-Jasmin* is the most common of these; it bears white Flowers tinged with Purple on the Back of the *Petals*, or *Flower-Leaves*, and is very well scented: The time of its Blossom is from *August* to *November*, and sometimes all the *Winter* if it be kept warm and have Sun enough; this is propagated by Grafting it on the *Common White Jasmin* in *March*, as also by Inarching it in *May* upon the same common Sort, and the inarch'd *Plants* may be cut off the middle of *August* following. In *February* we should always cut off the Branches within four or five Inches of the Stem; and after they have fresh Earth put to their Roots, they may be set near the Glasses or Windows of the House; these love not too much Water, and a *medium* Soil between Sand and Clay, without Dung; they are to be housed with the *Orange-Tree*.

The *Portugal-Jasmin* likewise bears a white Flower tinged with Purple, but the Blossoms are not so large as those of the former, tho' in much greater Number: Sometimes I have seen near one hundred in a Cluster; they smell like *Orange-Flowers*, and last a long time; the Leaves of the Plant are Ever-green (as are those of the former) somewhat resembling those of the *Ivy*, it is propagated like the fore-going *Jasmin*, and likewise by Cuttings planted in *May*, taking notice that they be of young Wood, and that at least one Joint be set in the Earth, for at that part they take root, tho' not 'till the second Spring after planting. I find that the *Plants* raised from Cuttings are apt to shoot very vigorously, and are therefore barren; but those which are grafted or inarched upon common Stocks blossom every Year very strong, which may proceed from the difference of Vessels in the Stocks, and the Graft which checks its over Vigour.

This *Plant* begins its Blossom in *August*, and continues flowering 'till *October*; we may cut off the inarched *Plants* in the middle of *August*, which is the time of releasing all other *Plants* grafted in the same manner, setting them immediately under some Shelter, lest they be damag'd by the Winds, which often break the *Cion* from the Stock. For this End of *Inarching*,

we should be careful to make Provision of some Plants of the *Common Jasmin* in Pots the Year before we design to graft, otherwise they will not be vigorous enough to incorporate with the *Gions*.

This *Jasmin* should be set in and out of the House with the *Orange-Tree*, putting fresh Earth to the Roots in the Spring and Autumn, as we must do to every other *Exotick Plant*: But as *Orange-Trees* love Shade in the *Summer*, this cannot have too much *Sun*.

The *Indian-Jasmin* has Leaves somewhat like the former; it bears Bunches of yellow Flowers of a very agreeable Scent; it begins to flower about *August*, and continues its Blossom 'till the Spring following. I have frequently gather'd ripe *Seeds* of it, and have raised *Plants* from them, sowing them as soon as they were ripe, and giving them the Assistance of a *Hot-Bed*: But the most common way of raising this *Plant* is from *Layers* in Autumn, or in the Spring, when we can get young Shoots to lay down, which should always be as tender as possible for this Work, or they will not strike Root, which must be observ'd as a Rule in the laying of every kind of Plant. The *Layers* of this *Jasmin* will not be sufficiently rooted 'till they have been a full Year in the Ground, and then may be taken off and planted in single Pots. The best Seasons of transplanting this Kind, is either in *April* or the middle of *August*; the Earth for *Orange-Trees* does very well for this *Plant*, and it must be housed as the other Kinds of *Jasmin*.

It would be well to try whether this Sort would not encrease by Inarching it upon the *Common Jasmin*; I see no reason why it should not as well as the *Portugal Kind*; but if that will not do, the *Common yellow Jasmin*, I think, can hardly fail.

We have two Kinds of the *Arabian-Jasmin*; one with single Flowers, and the other with double Blossoms; in other respects they are alike, and require the same kind of *Culture*; the Flowers of both are white and extremely sweet-scented, but are somewhat differing from the other Kinds of *Jasmin* in their Figure: Both these Sorts blossom about *August*, and with good Management

nagem
round,
I have
when t
or thre
put to
will sh
the Le
of ther

This
find it
the W
describ
set ab
and re
The I
in thre
Turf:
Jasmin

The
from
twent
Tree,
our C
so swe
near
July t
ing 't
remain
they
their
of th
them
the S

In
curio
eight
Poun
only
whic

nagement bring a great many Flowers; the Leaves are round, somewhat curl'd, and set on in Pairs at the Joints: I have rais'd them from Cuttings taken off in *April*, when these Plants should be always pruned within two or three Joints of the Stem, and then have fresh Earth put to their Roots; by means of this Pruning they will shoot near a Foot in a Summer, as I have seen at the *Leyden Gardens*, where they have near one hundred of them in good Health.

This has been esteem'd a very tender *Plant*; but I find it is more injured by Wet than Cold; it will stand the *Winter* very well in such a *Green-House* as I have described, if it has not too much Water, and may be set abroad the latter end of *May*, or beginning of *June*, and remain out of Doors 'till about the 20th of *August*: The Earth it chiefly delights in is at least two Parts in three of Sand, and the rest fresh Mold from under a Turf: We may try to march it upon the *Spanish Jasmin*, or increase it by *Layers* at the Pruning Season.

The *Coffee-Tree* is another Kind of *Jasmin* brought from *Arabia Felix*, about the Latitude of twenty or twenty one; the Leaves are like those of our *Chestnut-Tree*, but are ever-green, and the Flowers like those of our *Common Jasmin* in Figure and Colour, but are not so sweet-scented; they grow in Clusters at the Joints, near the Extremities of the young Branches. About *July* this *Plant* begins to blossom, and continues flowering 'till *October*, setting plentifully with Fruit, which remains upon the Tree 'till the *July* following before they ripen, and are then of a dark red Colour, and in their Shape and Size somewhat resembling the *Berries* of the *Lauro Cerasus*, but have two *Kernels* in each of them, which split in the middle like the *Bay-Berries* of the Shops.

In the *Amsterdam Garden*, which is so famous for curious *Plants*, I have seen some of these Trees near eighteen Foot high, so full of *Berries*, that several Pound Weight of Fruit was gather'd off of two Trees only. The *Hollanders* first got *Plants* from *Arabia*, which they afterwards planted about *Batavia*, and ha-

ving increas'd them there, they supply'd the Garden at *Amsterdam* with them, and have now raised so many from Seeds that ripen'd in *Holland*, that they have sent over several Trees to their Settlement at *Surinam* in the *West-Indies*, in order to cultivate them in that Country, where they will undoubtedly turn to good Account, as I am perswaded they would do if they were propagated in the *South Parts* of *Carolina*, which I think would be well worth our Trial, if that Country remains in our Hands.

In the Culture of this Plant the Dutch Gardeners prepare a Soil for it compos'd chiefly of Sand, and the Refreshings they give it with Water are seldom and sparing in the *Winter*; but in the *Summer* it has a more plentiful Allowance, especially during the time of its Blossom. About *June* they take it out of the House and wash and clean the Leaves and Branches, and letting it remain in the Air 'till the beginning of *July*, they then set it in again to the Conservatory for flowering. In *April* and *August* they give fresh Earth to the Plants, and they thrive extreamly.

In the raising of these Plants from Seeds, they first separate the Kernels in each Seed; and after they are cleansed from the Muscilage about them, they are immediately set two Inches deep in Pots fill'd with sandy Soil, and plunged into *Hot-Beds*: The Seeds being thus order'd, must be kept moist by frequent Sprinklings of Water 'till they come up, and the Glasses over them always kept close; about six Weeks after Sowing they will begin to appear, and have two or three Leaves a-piece before *Winter*. I have heard, that unless the Seeds are sown as soon as they are gather'd they will not come up; and hitherto there is no other way known of propagating this Plant but from Seeds, tho' I think it would not be against Reason to try to Inarch it upon some other Kind of *Jasmin*.

The *Geranium* is a Plant whose Varieties are very considerable, if we were to join those of our own Country with the Kinds we receive from *Africa*; it takes its Name of *Cranes-Bill* from its Seeds, which some-

somewha
to the
which I
indeed a
have thi
tivate a
Name f
Many
figur'd
Botanich
Botanist
fer for
In th
th
ro
R
Pag
M
le
Pag
A
F
Pag
In
Pa
Bo
ed
to
p
B
Kin
ers f
of t
the

somewhat resemble the *Beak* of a *Crane* or *Stork*: Hither-
to the *Exotick Kinds* have carry'd *Latin Names* only,
which I think help to confound some *Gardeners*, and
indeed are too long to recite; I shall therefore, since I
have this Opportunity, give each Sort, which we cul-
tivate at present in our *Green-Houses*, a short *English*
Name for the greater Ease of the Memory.

Many of the Sorts I design to treat of have been
figur'd by the Learned and Accurate Dr. *Commelin*,
Botanick Professor at *Amsterdam*, and that late Admirable
Botanist Dr. *Herman* of *Leyden*, to whose Works I re-
fer for the Cuts of those I am about to mention.

In the *Hortus Lugduno Batavus*, Page 275, we find
the *Geranium Africanum Arborescens*, *Ibisci folio*
rotundo, *Carlinæ odore*, which we may English the
Round Mallow-leav'd Cranes-Bill.

Page 278 of the same, *Geranium Africanum Frutescens*,
Malvæ folio Laciniato odorato, or Notch'd Mallow-
leav'd Cranes-Bill.

Page 283, *Geranium Africanum*, *Alchimillæ Hirsuto*
Folio, *Floribus Albidis*, or Alchimilla-leav'd Cranes-
Bill.

Page 285, *Geranium Africanum*, *Noctu Olen*, *Tubero-*
sum & *Nodosum*, *Aquilegiæ foliis*, or Colombine-
leav'd Cranes-Bill.

In Dr. *Commelin's Prælod. Botanic.* Page 51, *Geranium*
Africanum Arborescens, *Alchimillæ hirsuto folio*, *flori-*
bus rubicundis, which we may call the Painted-
leav'd Cranes-Bill, as I shall further explain.

Page 52, *Geranium Africanum*, *foliis inferioribus Asari*,
superioribus Staphydis Agriæ, *Maculatis*, *Splendenti-*
bus, & *Acetosæ Sapore*, which we may name Spot-
ted Ivy-leav'd Cranes-Bill.

Page 54, *Geranium Africanum frutescens folio Crasso*, &
Glauco, *Acetosæ Sapore*, or Sea-green Cranes-Bill.

Beside these, we have in our Gardens two Dwarf
Kinds of *Cranes-Bill*, with tuberous Roots, whose Flow-
ers smell sweet in the Night: I have not seen any Cuts
of them, and therefore shall not give the Authors Names;
the one I shall call the *Anemone-leav'd Night-scented*

Cranes-Bill, and the other the *Fennel-leav'd Night-scented Cranese-Bill*.

The first of this List makes a Shrub of three Foot high; the Leaves smell somewhat like *Rhubarb*, and it bears large Bunches of Purple Flowers variegated with a darker Colour; this blossoms from *July* to *September*.

The Second, with the notch'd Leaves, is a Shrub about the height of the former, with sweet-scented Leaves; the Flowers are small, and of a very pale purple Colour, and appear about *May* and *June*.

The Third has Leaves like the Plant call'd *Lady's Mantle*, is a low Plant in comparison with the others, and bears white Flowers about *June*.

The Fourth has large Knots at the Joints, and Leaves like the *Columbine*; the Flowers which commonly appear in the *Summer* are extremely sweet in the Evenings, but have no Scent in the Day-time.

The Fifth, which I call the *Painted-leav'd Cranese-Bill*, makes a Shrub sometimes four Foot high, and blossoms very plentifully all the *Summer*, bearing large Clusters of Pink-colour'd Flowers; each of its Leaves are curiously mark'd with a dark-colour'd Streak in the shape of a Horse-Shoe; which together with the pleasant Green of the Leaf is very beautiful: And what is likewise worthy our Notice, when these Leaves decay, the green Parts change into a fair Yellow; and the dark Streaks, which are naturally almost Black, alter into a bright *Vermilion*; so that I cannot help sometimes, for the sake of so agreeable a Variety, bruising some of them to forward their Decay. The Alteration of Colours in the Leaves of this Plant gave occasion to a Learned Member of the *Royal Society*, Dr. *Stuart*, to consider the Cause of different Colours in the Leaves and Flowers of Plants, which he has so judiciously set forth in a Letter he was pleas'd to honour me with upon that Subject, that for the Embellishment of my Work, I shall insert it in the Conclusion of this Chapter.

The Sixth Kind mention'd in the List has shining Leaves like those of *Ivy*, and pretty Flowers, of a pale purple Colour, variegated with a deep Red: the Plant in-

inclines to run upon the Ground, and therefore to give it the better Appearance, we are forced to support it with Stakes; it blossoms in the Autumn.

The Seventh has thick juicy Leaves of Sea-green Colour, tasting somewhat like *Sorrel*; the Branches are naturally so weak that they must be supported with Sticks. About *July* this *Plant* begins to flower, and remains blossoming 'till about *September*; the Flowers of this Kind are of a pale Flesh Colour, and variegated with Crimson.

All these Kinds are propagated either by *Seeds* or *Cuttings*; the *Seeds* may be sown in *March* upon a *Hot-Bed*, but the most proper Season of planting the *Cuttings* is about the End of *May*, and then they will easily strike Root in the natural Ground, and become handsome *Plants*, fit to be potted the *August* following; they love a medium Soil without Dung, and delight in Water; they may be housed with the *Orange-Trees*, for they are not very tender.

The other Kinds of *Geranium*, sur-nam'd *Night-scented*, Blossom at uncertain times in the *Summer*, and are propagated by parting their Roots in *May*. The Leaves of the *Fennel-leav'd* Kind, have a very grateful Scent; both these are hardy, and may be housed with the others; they love a light Soil.

I shall now conclude this Chapter, with the Ingenious Letter which I promis'd relating to the Colours in the Leaves and Flowers of *Plants*.

To Mr. BRADLEY.

London May the 9th, 1717.

S I R,



OUR ingenious Conversation, join'd with the Delights of Mr. *Balle's* curious Gardens at *Cambden-House*, made such an Impression t'other Day, as led me into the following Thoughts on the Subject You then started, concerning the Variation of Colours in the *Leaves* and *Flowers* of *Trees* and *Plants*, such as is remarkable in the variegated

variegated *Hollies* and *Tulips*; of which Variegation you have certainly assign'd the true remote Cause, in the second Part of your *New Improvements of Planting and Gardening*, Cap. VII. Sect. I. of the *Tulip*, where you assert, that a Weakness and Defect of Nourishment produce that Variety of Colours, which was not naturally and originally in the *Plant*, which you support by Observations, Experiments and Histories there, and in several other Parts of your Works, so as to put it beyond all doubt.

On this Occasion you shew'd me a bruised and faded Leaf of the *Geranium Africanum Arborescens Alchimille bifruto folio, floribus rubicundis*, Comel. Prol. Bot. partly Green, but turn'd of a pretty deep Red in the bruised Parts; this gave Rise to our Discourse concerning the immediate Cause of the natural Colour in Plants, and of this preternatural Colour in the bruised Parts.----I'm perswaded I shall not be able to give one of your Taste any Satisfaction on this Subject; I only venture to send you some loose Thoughts concerning it, being assur'd that your various Observations and Experience will soon expunge the Errors of one less conversant about these things.

I imagine then that the natural, as well as preternatural Colours in *Plants* and *Flowers*, are owing immediately to the Juices circulating or contained in their Vessels, and not to the Vessels themselves, which I think appears by the express'd Juice retaining the Colour of the *Leaf* or *Flower* from which it's drawn, while the gross fibrous Part, which is the Vessels retain'd in the Strainer, lose their Colour with their Juice, and being examin'd by the naked *Eye*, or a *Microscope*, appear colourless or transparent, so far as they are drained of their Contents: These then being transparent, reflect few Rays to our Eyes, but transmit most of them, which the more opaque Mass of Fluids re-reflects, giving us such colour'd Rays of Light, as it cannot absorb or transmit. 'Tis from the Juices then we have the several Colours of *Plants* and their *Flowers*; but what special Texture of the Fluids, and their Surfaces, or of

any

any other Object, may be necessary to reflect this of that Kind of coloured Rays, for ought I know, is not determined with any absolute Certainty.

But as most of our Knowledge of Nature consists in our being able to assign some remoter Causes, and a few Effects of things, in some gross Manner, rather than in an intimate Acquaintance with their Essences; So after the same manner we may be able to go some Length in this Disquisition, towards finding out the remoter Cause of Colour in the Juice of *Plants*, tho' we cannot point out the minute Figures in the Particles of that Fluid, which may immediately produce this Effect.

Thus then the Blossoms and Fruit produced according to the Nature of the ingrafted Branch, and not of the Stock of a different Kind, do shew that the circulating Juice of *Vegetables* is alterable by the Mould of the Vessels through which it passes, so as to be forced by them to put on a different Colour and Taste from what it had before it entred them; and we find this equally true in Animals.

There's only some, and those very few, Exceptions of Juices in Plants, and common Salt in Animals, which seem to be unconquerable by the Power of their Vessels, so as to be able to pass through them, and circulate for some time, without any sensible Alteration. The Chymical *Analysis* of the Blood, Urine, &c. of such Animals as use common Salt in their Food, having discovered it unaltered in any of its Qualities, after many Circulations in the Animal Body: And by your own Experiment, mention'd *Cap. I. Part I.* of your *New Improvements of Planting and Gardening*, and Mr. *Furber's*, *Cap. II. Sect. I.* of the same Work; by these Experiments I say it appears, that some Juices are so far from being liable to suffer any Alteration by the Vessels of the *Plant* in which they circulate, that they rather seem to have the Power of altering the natural Frame and Texture of the Vessels themselves, and of making a very lasting preternatural Impression upon them, by which they become capable afterward of moulding and framing their Juice to a different Colour
from

from what it had naturally, and before the Experiment; else it would be very difficult to conceive how such a small Quantity of Juice, communicated from a single Bud of yellow strip'd *Jasmin*, inoculated upon a Branch of a plain *Jasmin-Tree*, should in three Months time (supposing it self to perish, as the Experiment allows, immediately after that time) be able to occasion such an Alteration of the natural Juice of the whole Tree, to the Colour of the Bud inoculated, continually through all the succeeding Years of that Tree's Duration; for such a durable Effect must have a permanent Cause; but that cannot be found in the fluctuating Juice, which is daily wasted and renewed, but must be owing to some Alteration in the Figure or Diameters of the Vessels, which may be suppos'd to continue the same for many Years after, unless some new Alteration be industriously, or by some uncommon Accident wrought upon them: The Conclusion to be drawn from Mr. *Furber's* Experiment will be much the same.

But Instances of this kind being very rare, we are only to regard the common Course of Nature, which has made these circulating Juices generally alterable by the Power of the *Solids* or containing *Vessels*, both in *Plants* and *Animals*. Thus the Juices do seem to get and retain their several natural Colours from the *Solids*, so long as they continue in a due Course of Circulation through them.-----But when the Circulation, for whatsoever Cause, begins to fail or become languid, there seems to be yet another possible Cause of Colour in *Plants*, to wit, of those preternatural Colours or Variations, subsequent to a Defect of Nourishment, or a Wound or Bruise in any of their Parts: In all which Cases, the Circulation and concurring Energy of the Vessels are languid, and therefore a Degree of Stagnation ensues: And as every Stagnation of a vegetable Juice is attended with a proportionable Degree of Fermentation, and Fermentation is productive of considerable Alterations, both in the Taste and Colour of the fermenting Juice, it may not be altogether improbable, that, in the Cases mentioned, the Variation of Colour may

may proceed from certain Degrees of Fermentation in the Juice ; tho' I only advance this as a probable Conjecture, and not what I can from any Experiment demonstrate.

However, to render this Conjecture somewhat probable, we are to consider, that the constant natural Tendency of all recent vegetable Juices is to Fermentation, which commences so soon as they are left to themselves, or delivered from a progressive local Motion of the whole Mass: This appears in the expressed Juice of the *Grape*, and of all *Fruits*, and in *Malt Liquors*, which from the Beginning are in a few Days carried to the height of Fermentation, in which time they acquire, first a sweetish, and afterwards a vinous Taste ; and by a second Fermentation (which in the weakest of them happens very soon after the first) become Vinegar or sour ; their Colour at the same time becoming less saturated, more transparent, less opaque. But this is yet more remarkable in the Juice of high-coloured Flowers, as of the *Clove July-Flowers*, *Corn-Poppy* and *Violet* ; all which Juices are apt to ferment in some little time after Expression, and in the Fermentation sensibly lose a good deal of their Colour, become paler, and more transparent : Indeed the *Violet* Juice loses almost entirely its Colour in Fermentation. The same Fermentation happens to the Juice of *Vegetables* yet contain'd in their *Vessels*, and enjoying some low Degree of irregular Circulation, as appears by *Herbs*, *Grass*, *Hay*, *Flowers*, *Fruit*, &c. cut down and thrown together in a Heap, where all the Signs of Fermentation do very soon appear ; such as *Heat*, *Sweating*, change of *Smell*, *Taste* and *Colour* ; so that it seems plain, that Fermentation in all its Effects, takes place in the vegetable Juices, so soon and as far as the Circulation declines: These two different Powers, or Operations of Nature, being so contrary to one another, that they cannot subsist together in Perfection ; but like the opposite Weight in the Scales of a Ballance, as the one preponderates, the other must give way. And indeed the Case in Animals is very near parallel to this, if we substitute Putrefaction
in

in them to Fermentation in *Vegetables*; for in those we find, that the Blood in a bruised Part degenerates from its natural Colour by Stagnation, into a Livid, Blue, Green and Yellow (all Signs of Putrefaction) successively, until the Re-absorption be perfected, and the Circulation restored. ----- This is farther illustrated by the common Practice of ripening green Fruit in Straw, or in a moderate Warmth, where Evaporation of the Juice and Defæcation may be avoided; which shows that the change of Taste and Colour, can be owing to nothing else here than a certain slow degree of Fermentation, entertain'd by that Artifice in the Juice contained within the Vessel or Vesicles of the Fruit: Was there indeed a free and open Communication with the external Air, this Fermentation would go on to produce the same Effects more quicker, as we see in the same Juice expressed: And as all Experiments in Fermentation do shew, that either a total Stagnation, or some degree of it, and Heat, are necessary to produce Fermentation in vegetable Juices; the Autumn affording us a slow Circulation of the Juices, and an increased Heat, these two concurring must needs produce that degree of Fermentation, to which we owe the ripeness of our growing Fruits, and the change of their Colours and Taste in that declining Season; as we owe the ripeness of our Liquors more remarkably to the very same Causes: And was it possible there should be a perpetual Spring, that is, a continued equal brisk Circulation of the Juices, with such a low degree of Heat as that Season affords, it would be equally impossible to produce ripe Fruit, because the two Pre-requisites of Fermentation wou'd be wanting in Nature, tho' Art might in some measure supply that Defect.

The Conclusion then seems to be this, That Circulation and Fermentation are the two only Powers in Nature which can produce the Variety of Colours, and the other Changes we observe in *Vegetables*; as Circulation and Putrefaction are the two Powers that work the various Changes in Animals: And that as the due degree of Circulation in either declines, or is impair'd, Fermentation

Ferm
exhib
them

If
our C
the c
on o
upon
of th
are t
argu
or it
only

If
Sun,
thro
Stre
Gree
stros
est a
con
find
fam
as A
mo
ject
tha
to l
and
fam
Co
Pla
the
por
bei
of
dep
in

fic

Fermentation or Putrefaction takes place respectively, exhibiting the Signs of Diseases or Decay, of which themselves are the immediate Causes.

If I rightly remember, something was mentioned in our Conversation concerning the different Strength of the coloured Rays of the *Sun*, and whether the Reflection of these stronger or weaker Rays might not depend upon a suitable Strength and Weakness in the Texture of the *Plant* or *Flower*; as if the strongest Rays, which are the Red, being reflected by a red *Flower*, might not argue a greater Strength in the Texture of that Flower, or its Juices, than is in the Blue *Flowers*, which Reflect only the Blue, to wit the weaker Rays of the *Sun*.

If we may judge of the Strength of the Rays of the *Sun*, by their different degrees of Refraction in passing through a *Prism*; as their Refraction increaseth, so their Strength decreaseth in this Order; *Red, Orange, Yellow, Green, Blue, Purple* and *Violet*; so that the *Red* is the strongest, Suffering least Refraction, and *Violet* the weakest as it suffers the greatest Refraction. But when we consider these Rays, as reflected from opaque Bodies, we find that Objects of the weakest Texture reflect the same Kind of Rays with those of the strongest Make, as *Red* is shewn by the tender *Tulip*, as well as by the more durable *Rose*; and so in a Variety of other Objects, differing yet more in Strength or Weakness: So that the Strength of Bodies reflecting Light, seems not to be so much concern'd in the Reflection as the Frame and Disposition of their Surfaces, which may be the same in the weakest, as in an Object of the strongest Composition. Besides, the Strength of the Texture of *Plants* and their *Flowers*, seems to depend more upon the Firmness and Disposition of their Vessels, than upon the Consistence of their Juices; but the Vessels, being transparent, are least concern'd in the Reflection of Colours; therefore the reflected Colour seems not to depend upon any Proposition of Strength or Weakness in the *Plant* or *Flower*.

Thus, Sir, I have ventured to shew you how superficial and conjectural my Knowledge on this Subject is,
in

in hopes that you'll forgive and correct the Faults which my Compliance with your Desire has led me to discover, being with sincere Respect and Esteem,

S I R,

Your most Humble

And Obedient Servant,

Alexander Stuart.

CHAP. IV.

Of the MELIANTHUS, OLEANDER, MALABAR-NUT, LEONURUS, AMOMUM PLINII, CAPER, ACACIA, APOCINUM, and other Exotick Shrubs, which are not succulent, their Culture.



OF the *Melanthus* we have two Kinds, the Greater and the Lesser; they are both *African Plants*, and blossom freely with us, especially if they are not used too tenderly. The large Kind will stand abroad during the Winter, and seldom fails to produce its Spikes of Flowers every Year, which are of a *Coffee Colour*: These Flowers afford each of them a drop or two of a clammy Juice, tasting as sweet as Honey, from whence I suppose it took its Name of *Melanthus* or *Honey-Flower*. The smallest Sort is not so common with us as the other, and is therefore kept in the House all *Winter*; tho' I am of opinion it would stand abroad as well as the large Kind, which comes from the same Country. The Flowers of this small Sort are very beautiful, having a Mixture of Red, Green and Yellow in them; both these *Plants* are propagated with ease from Slips taken from about the Roots any time between *May* and *August*; they delight in sandy Soil and much Water, especially the large Kind; both these are design'd with great Accuracy; the First in the *Hortus Lugd. Bat.* and the small Sort in Dr. *Commelin's Plant. Rarior. Amstelod.*

The

The *Oleander*, or *Nerium*, which some call the *Indian Laurel*, has many Varieties. The most common of them in the *English Gardens* is the Sort with the red Flower, which is called the *Scarlet Oleander*; it is so hardy, that I have kept it abroad all *Winter* without any other Shelter than a *South Wall*; it is easily propagated by *Layers* in *April*, which will strike Root to transplant the *August* following. We have likewise a white flowering Kind, as hardy as the scarlet Sort; but the other Varieties of this *Plant*, such as the *Sweet-scented Oleanders*, with *single* and *double Flowers*, are esteem'd more tender, and should be housed with the *Orange-Trees*; all these blossom in *July* and *August*, and are propagated like the first; they love a medium Soil, without Mixture, and moderate Watering: See the Figures of the two last in the *Hortus Lugd. Bat.*

The *Adhatoda Zeylanensium*, call'd by our *Gardeners* the *Malabar-Nut*, is very apt to blossom with us, but has not yet, as far as I can learn, produced any ripe Fruit in *England*; it makes a large *Plant*, and is pretty hardy, and is an extravagant Lover of Water: The Earth should be the same as for the *Oleander*, and the Pots large; for these *Trees* encrease prodigiously in their Roots, which should be prun'd every *August*, and fresh Earth put to them: This is increas'd from Cuttings planted in *May*, which strike Root very easily in the natural Ground; it must be housed with the *Orange-Tree*. There is a good Cut of this *Plant* in the *Hortus Lugd. Bat.*

The *Leonurus* is a *Plant* of the *Cape of Good-Hope*, named by *Breinius*; it is of the Species of the *Sideritis* or *Iron-Wort*, in which Tribe Mr. Ray has plac'd it: We have two Sorts, one with Leaves like *Hemp*, and the other with round notch'd Leaves like those of the *Lamium*, or *Dead-Nettle*; the Flowers of both Kinds are alike, of an *Orange Colour*, and of the same Size and Figure, blossoming in *September* and *October*; they are both easily propagated by Cuttings planted in any of the *Summer Months* upon a common Border, where they soon strike Root if they have Water enough; the Earth

for the foregoing *Plants* is very fit for this, and in every respect should be treated like the *Malabar-Nut*.

The *Amomum Plinii*, or *Tree Night-Shade*, is a pretty Shrub, easily propagated either from *Seeds* or *Cuttings*, which we may put into the natural Ground in *May*; the *Berries* are somewhat like *Cherries*, and ripen soon after the *Plant* is brought into the House, and remain upon the *Plant* all *Winter*; it is call'd by some therefore, the *Winter-Cherry*, which is the most common Name: Its *Culture* is the same with the foregoing *Plant*; only to make it bear Fruit plentifully, it may be brought out of the House with the *Myrtle*; and during the *Summer* it must stand in some place defended from the *Sun*, and constantly supply'd with *Water*; but it will not bear any Fruit if it be set under *Trees*: It is so hardy, that I believe it would stand abroad all the Year, but I have not try'd it.

In the same Tribe is the *Mala Insana*, or *Mad-Apples*, or the *Solanum Pomiferum*, which is extremely well figur'd in the *Hort. Ludg. Bat.* It has Leaves deeply notch'd and arm'd with *Spines*; the Flowers are of a deep Purple, and the Fruit before they ripen variegated with White and Green; and being fully mature, are as large as ordinary *Golden-Pippins*, and of a bright yellow Colour; these Fruits ripen in the *Winter*, and contain many small Seeds, like those of the *Capsicum Indicum*, or what we call *Guiney-Pepper*; they may be sown in *March* or *April* upon Hot-Beds, and will bear Fruit the second Year: Give this *Plant* the same Earth as the *Orange-Tree*, and house it at the same Season: This, like all other potted *Plants*, must have fresh Earth every Spring and Autumn. Besides this, we have another Kind, whose Leaves are shaped like those of the *Oak*, but are so hoary that they seem to be made of white Woollen-Cloth; this Sort bears smaller Fruit than the other of a Golden Colour, which also ripen in the *Winter*; it requires the same Management as the former Kinds.

The *Caper* has been propagated with great Care in our *Green-Houses* to very little purpose: Where the greatest Industry has been used, it has hardly been brought

brought to flower in *England*; and tho' it has had the Advantage of the best Stoves, it has been subject to die in the *Winter*, which has given Occasion to some *Gardeners* to believe it was too tender for this Climate; but that Notion is unreasonable, since we know the *Caper* is an *European Plant*, growing familiarly about *Genoua* and the *South Parts of France*; the Soil and Situation is only to be consulted to make it thrive very well in *England*, even in the open Air. It will resist the Severities of our *Winters*, as I have experienced, being sown in the Cracks of old Walls, where it strikes Roots in the Morter: Where it grows wild, it grows in like manner on the sides of rocky Places among Rubbish, and in Holes of old Stone-Walls or Ruins: If even it is planted in a Pot of Rubbish, it will not thrive, if it is directed to grow upright, but must rather be so disposed, as either its Root may be somewhat above the Branches, or at least it may grow parallel with the Earth, such as it will do if it be set in the Side of a Wall. The Blossoms are very beautiful, of a *Peach-Bloom* Colour, crouded with *Tendrils* or *Stamina's*: The Buds of these Blossoms are pickled for Eating. It may be as well propagated in *England* as in any other part of *Europe*, by observing the Method I describe, and sowing the *Seeds* in *March*, which readily come up, if we cover them with sifted Rubbish after we have laid them in the proper Places. It has been a great Fault that some have been guilty of, when they have receiv'd *Plants* and *Seeds* from foreign Countries, to give them too much Warmth, without considering whether they came from the *North* or the *South*; from *Muscovy* or *Greenland*, or under the *Line*. I am of Opinion it would be as hard to keep an *Iceland* Plant with us, as one that grew immediately under the *Line*; for as the one is naturally maintain'd by excessive Cold, so is the other by extream Heat. I imagine that the greatest Cold of our *Winters* is near the same with the Temper of Air in the *Summers* of those Countries, lying in seventy or seventy five Degrees of Latitude; and if so, then the *Plants* from those frozen Parts of the World could only be made to grow with us in our colder Sea-

sons, when perhaps they would not be naturally inclin'd to shoot, for then the Sun would be far distant from their native Country, which would be the time of their *Winter*; and if we could make them shoot at that time by our natural temper of Air, the Heat of our *Summers* would afterward scorch them to death, or smother 'em, unless they were to be kept in *Ice-Houses* during the Season of our warm Weather, and not expos'd abroad 'till our Frosts began: For if we are to follow Nature in the Culture of *Plants* from hot Countries, we must do the same in the Management of those from the frozen Zone; we must imitate the Heat of one, and the Cold of the other.

Let us not therefore mistake, in supposing that the same Degree of the Sun's Heat, and the same Temperature of Air, which is natural to any one Part of the World, is necessary for the setting in Motion the *Sap* of the several *Plants* natural to divers Countries: As every Climate is different from the rest, so are the several *Plants* in those Climates naturally adapted to grow, by means of the wonted Temper of Air and Warmth of their native Countries; and will not thrive near so well in Stations, only a little differing from the Place of their Birth: And indeed it is partly the same in living Creatures, which we find do not all require the same Degrees of Warmth for hatching them from their Eggs: The same Heat which hatches the Egg of a *Pullet* would destroy the Eggs of *Insects*: And I suppose that the Warmth which hatches a *Pullet*, would not be half enough to hatch the Egg of an *Ostritch*, who is forced to lay her Eggs in the scorching Sands of *Africa* to bring them to Life.

It is observable, that *Mosses* of several Kinds only grow with us in the *Winter*; and at the least approach of warm Weather they decay, and are intirely at a stand, and seemingly dead when our *Summers* begin, which may shew us that there are *Plants* that grow in certain degrees of Cold (as we call it) as well as Heat; for *Mosses* are no less perfect *Plants* then *Oaks*, or other the most remarkable Trees; they have *Roots*, *Branches*, *Leaves*,
Flowers

Flowers
 I have
 which
 go mo
 Food f
 remem
 bout I
 grees,
 ing 'til
 assured
 turn t
 of in
 we ha
 Flow
 Seeds
 the G
 very
 Amst
 great
 I
 Amst
 four
 Ham
 Engl
 to a
 the
 in th
 Old
 easil
 Th
 of t
 by
 Son
 Spi
 Le
 Flo
 th
 co
 bu
 far

Flowers and Fruit, as well as the most notable *Plant*. I have heard that the colder Climes abound with *Mosses*; which are still larger and in greater Quantities, as we go more towards the *North*; and they that serve for Food for the *Rane Deer* in the *North Parts of Muscovy*. I remember once to have seen a *Plant* brought from about *Norway*, which grew in sixty five or sixty six Degrees, that budded out in *December*, and continu'd growing 'till the following *March*; but after that I am not well assured what became of it: But 'tis time now that I return to the *Culture* of those *Plants* I undertook to treat of in this *Chapter*. Besides the *Caper* already mention'd, we have two other Kinds, that with the small yellow Flower, and the *Bean Caper*, they are both raised from Seeds sown in *March* in sandy Soil; the first requires the *Green-House* in the *Winter*, but the other will thrive very well in an open Border, as I've seen it do in the *Amsterdam Garden*, altho' it is commonly housed with great Care in *England*.

I have seen many Sorts of *Acacia* cultivated in the *Amsterdam Gardens*; and I remember formerly three or four Sorts of them were growing among the Rarities at *Hampton-Court*; but at present we have few of them in *England*, unless it be the *Virginian Kind*, which grows to a large Tree, and will stand abroad without Shelter in the *Winter*; as we may see some of them now growing in the Court before *Russel-House*, *Bloomsbury*, and in the Old Palace Yard, *Westminster*; a plain Proof we might easily naturalize the *Virginian Plants* to our Climate. The Leaves of this, and other *Acacia's*, are not unlike those of the *Tare* or *Vetch*, and differ from one another chiefly by being larger or smaller, and not in their Shape: Some again are vary'd from the rest by having large Spines or Thorns growing upon the Foot-Stalks of the Leaves, sometimes as large as Cock-Spurs, and the Flowers of some of them are sweet-scented; these, as they come from several Parts of the World, should be consider'd in relation to the Heat necessary for them; but they all, so far as I yet have observ'd, love a dry sandy Soil; and little Water.

The *Apocinum*, or *Dogs-Bane*, has many Varieties; some growing upright like little Trees, and others climbing and creeping on the Ground like the *Wood-bind*: The Flowers in their Shape are not much unlike those of the *Amomum Plinii*, but have their Petals turn'd more back; their Colours are various: These all bear Cods, for the most part shaped like those of the long *Guiney Pepper*; but their outsides commonly cover'd with long tender Spines of the same Colour with themselves; within them are the Seeds lying as it were in a Bed of Cotton, some of which adheres to each of them; from the Seeds we may propagate them with ease, by sowing them in *March* on *Hot Beds*, or else raise every sort I have yet try'd, from Cuttings in the same Month, unless they be such as have tuberous Roots, which must then be parted; and some indeed which die to the Root every Winter, will be better increased from *Off-sets* taken from the Roots: I give them commonly a light natural Soil, which I find agrees well with them, and little Water, for they are all very milky, and apt to rot with much Wet. As to their Shelter in the *Winter*, it may be given them according to the different Climates they come from, and be set into the House sooner or later, as they are more or less tender.

We have two Sorts of the *Canna Indica*, or *Indian Cane*; one with plain green *Leaves*, and the other with variegated *Leaves*; they both flower in the Autumn, producing Spikes of scarlet Blossoms extremely beautiful: The first is raised from Seeds sown in *March* upon a *Hot Bed*, and may be increas'd by parting the Roots in the same Month; and so the strip'd sort also is propagated by *Off-sets*; for the *Seeds* of the strip'd Kind, which often ripen in *England*, will produce Plants with plain *Leaves*: They delight in a sandy Soil, and little Water, and must be housed with the *Orange-Tree*.

Of the *Genista* we have several sorts, which are cultivated in *Green-Houses*; they all love a sandy dry Soil, and are always propagated from *Seeds*, for *Cuttings* will not take Root, neither do I believe *Layers* will

succeed

succeed
or pare
should
The
ting th
ving th
flow C
Italy v
brough
Shelte
Th
is a Pl
again
having
smoot
Elder
Grape
are p
and a
if we
lently
the
and
and
ly ul
fown
a ric
T
dian
to t
whi
upp
seve
Th
Ma
tle
Pla
nia
ha

succeed any better ; as most of them have few spongy or parenchymous Parts, they require little Water, and should be housed according to their Climates.

The *Palm* or *Date-Trees*, are only propagated by setting the *Date-Stones* in light Earth in *March*, and giving them the assistance of a *Hot-Bed* ; they are indeed slow Growers, but indifferently hardy ; they grow in *Italy* without any Shelter, and I believe might be brought to stand abroad in *England*, after giving them Shelter for the three or four first Years.

The *Jalop-Tree* of *Carolina*, call'd in *Virginia*, *Poke*, is a Plant that dies to the Root every *Winter*, and rises again in the Spring to the Height of eight or ten Foot, having many Branches of a red Colour, the Leaves smooth and of a pleasant Green ; the Berries are like *Elder-Berries*, but grow in long Bunches somewhat like *Grapes* ; these are used for dying Red ; the young Tops are pleasant and wholesome when they are well boiled, and are frequently eaten by the People of *Virginia* ; but if we gather them too old they purge and vomit violently : The *Pigeon* and other Birds are very greedy of the Berries of this Plant ; a *Drachm* of the Root dry'd and powder'd (says my Correspondent) is a very safe and good Purge, very much like *Jalop*, and is frequently used by the *Indians* ; this is rais'd from the Berries sown early in the Spring on a *Hot-Bed*, and delights in a rich warm Soil ; it should be housed with the *Orange*.

The *Pitchumon*, or *Persimon-Plum*, call'd by the *Indians* *Puchimon*, is a Plant of *Virginia*, where it grows to the Size of a common-*Cherry-Tree* ; the Wood is white, and the Leaves very green and shining on the upper Side ; the Fruit somewhat like a *Medlar*, with several Seeds in it ; when it is ripe is soft and luscious : This Plant may be propagated by sowing the Seeds in *March*, like the former. It loves a light Soil, and little Water, and may be housed with the foregoing Plant.

The *Side-Saddle Flower*, is a Plant growing in *Virginia* and *Carolina*, which according to the Description I have had of it, with its Seeds which I have receiv'd from

several Hands this Spring, is one of the most surprizing Plants of those Countries; it dies every Year to the Root, and rises afresh every Spring, putting forth at that time a yellow Flower upon a slender Foot-Stalk with six Leaves, shaped somewhat like those of the *Flower-de-luce*; upon the top of the Stile grows a sort of Canopy, round on the Top like the Seat of a Side-Saddle, under which is the Seed-Vessel, divided into six Cells; the Plant follows the Flower, growing about a Foot high, and somewhat shaped like a *Trumpet*; upon the Top of which is a Leaf like the Lid of a *Can*, which is at the first coming up very green, but afterwards becomes yellow, full of purple Veins; this grows in spongy Ground in watery Places, so that it must be sown in Pots of Earth, as nearly imitating Bogs as can be, and set upon *Hot Beds*, minding to refresh the Earth constantly with Water as it begins to dry; house this with the foregoing Plant.

Virginian Dog-Wood makes a Tree about the Size of the common *Cherry-Tree*, blossoming early in the Spring; the Flowers are white, growing in Branches, and are succeeded by red Berries, which hang a long time upon the Tree: Sow them in Pots of light Earth in Autumn, and let them stand the *Winter* in the *Green-House*, giving them the assistance of a *Hot Bed* the following Spring. The *Indians* boil the Roots of this Plant in Water, which they account good to heal Wounds.

The *Sassafras-Tree* is also a Plant of *Virginia*, whose Figure we may see in *Gerhard's Herbal*, but the Description is imperfect: It loses its Leaves in the Winter, and in the Spring puts forth its Flowers of a yellow Colour in Clusters, succeeded by blue Berries, somewhat like those of the *Laurustinus*, upon red Foot-stalks; These Berries should be sown at Autumn like those of the foregoing Plant; it loves a light Soil, and I believe it might be made to grow in our Woods, after it is a little harden'd and used to our Climate.

The *Virginia Wild Crab-Tree* has Blossoms somewhat like the *Apple*, but very pleasant to the Smell; it bears small Fruit, of a yellowish Colour, and well scented, which

which the *Indians* preserve in *Sugar*: This is raised from Seeds sown in *March* upon *Hot Beds*, and loves a light dry Soil; house it with the others of this Country till it becomes hardy enough to be planted abroad.

The *Virginia Myrtle*, or *Candle-Berry Tree*, is Evergreen, and Aromatick; it bears Berries about the Size of a small *Vetch*, from which is drawn the *Green Wax* which *Candles* are made of; This *Wax* partakes so much of the natural Scent of the *Plant*, that the least Bit of it being burnt upon Coals will perfume a whole Room. The Berries must be sown at Autumn in Pots of black sandy Earth, and kept continually moist, as well before they sprout, as after they come up; let this be housed with the foregoing *Plant*.

It would be endless to enumerate the several Trees and Shrubs of foreign Countries that are propagated in *Green-Houses*; and I doubt not but such as will mind the foregoing Directions in this Chapter, will easily, from Experience, discover the right *Culture* of whatever *Plants* they get into their Collection. In the mean time I shall proceed to lay down the best Methods of treating such kinds of Plants as abound in Juice, and are called *Succulent Plants*.

CHAP. V.

Of *ALOES*, *TORCH-THISTLES*, *MELON-THISTLES*, *FIG-MARYGOLD*, *HOUSE-LEEKS*, the *EUPHORBUM*, and other *Succulent Exotick Plants*, their Culture.



THE *Plants* which I design to treat of in this Chapter are commonly stiled *Succulent*, for that they are plump and full of Juice, which they chiefly gather from the Air, as by Experience we find, witness the *Sempervive*, a kind of *Aloe*, which will live some Years without Earth or Water, being hung up in a Room, and the *Sedum Arborescens*, which I have known to be kept

kept after the same manner for many Years; in which *Plant* it is observable, that against Rain it puts forth *Roots* or little *Fibres* striking into the Air, which in damp Seasons is thick enough to afford it that Help, and some Nourishment; but as soon as the Air begins to grow thinner, and is more rarified, those *Roots* dry up before they can provide themselves with Nourishment sufficient to supply the *Plant* they spring from, which perhaps they would do, if they could enjoy that thicken'd Air three or four Months without Alteration.

The first Kind of *Succulent Plants* I shall mention, is the *Aloe*, which in my Opinion is the most beautiful Tribe of *Plants* belonging to the *Green House*. The most common Kind in our *Gardens*, with some few other sorts, are brought from *America*; but the greatest Varieties of them, and I think the best Kinds, come from *Africa*, chiefly from the *Cape of Good Hope*. *Aloes*, for the most Part, are compos'd of many *Succulent Leaves*, long and sharp at their Points, commonly arm'd with *Spines*: The *Leaves* spring immediately from the *Root*, and are placed in a Round, representing the *Rays* of the *Sun*; from their Center shoots forth the *Flower Stem*, which sometimes divides it self into *Branches*, but not always: Upon these *Stems* appear the *Flowers* which are *monopetalous*, but oftentimes are so deeply cut on the *Edges*, that without strict Examination they appear to have six *Petals*; they are the most like the *Flowers* of the *Hyacinth* in their Figure, but are seldom sweet-scented, and each *Fruit* has little black *Seeds* in it, lodged in three separate *Cells*.

Some *Aloes* are arborescent, inclining to make large *Trees*, breaking forth into *Branches*; as one sort which has *Leaves* somewhat shaped like those of a *Narcissus*, but larger, more succulent, and of a whitish Colour; but this is so rare, that I know not of any *Plant* of it in *England*, but what I brought with me from abroad, and have now growing. We have other Kinds, which are so small, that a whole *Plant* does not exceed the bigness of a *Crown-piece*; some grow close to the *Ground*, others are more aspiring, and have their *Crown*

of

of Leaves raised upon a Stem somewhat above the Earth : In short, they are surprisngly different from one another, and deserve our Care and Admiration as much as any Plant whatever.

I have seen about sixty different Kinds of *Aloes* in the *Physick Garden* of *Amsterdam*, chiefly the Product of the *Cape of Good-Hope*; some of them have been raised from *Seeds* from that Place, and others from young *Plants* rising from the *Roots*, or putting forth from the *Stems*; these are used with great *Tenderness* in *Holland*; but I find they are as hardy as any other Plant growing about the *Cape*; for of the forty Sorts, which I have cultivated for the three last Years, I have not lost one by Cold, but I find it is Wet chiefly that injures them. In *Africa* they all grow in Stony Places, and upon Rocky Ground; therefore the Earth I prepare for them is one half sandy Soil, and the other Rubbish of old Walls well sifted and mixed together, which contributes to keep them from rotting at the *Roots*; and in Planting them, I observe always to set them very shallow in the Pots, raising the Earth in that manner, that the *Plant* stands as it were upon a Hill, falling every way to the edge of the Pot; so that when they require any Water, it may be given them without touching any Part of the Plant; which if it should so happen, unless the Sun immediately dries it up, the Plant would be in danger of rotting.

In the *Summer* indeed, when they are abroad, a little Rain will not hurt them, because they then cannot remain wet very long, otherwise the Wet that will infallibly settle in the Heart of the Plants when the Rain falls upon them, would destroy 'em: I therefore chuse to keep them in the House 'till *June*, and return them thither from abroad in *August*, to avoid the Danger of too much Moisture, which they can hardly meet with between those Months.

While they are abroad, if the Weather be fair, they will require moderate Waterings once a Week, if their Earth is very dry: And from the time of their Housing, 'till the middle of *October*, gentle Refreshings may

may be given them in the Mornings, while the Sun is upon them, for then is the time of their Growth: But from *October* to the middle of *March*, or thereabouts, they must be kept very dry, and not have the least Moisture, tho' the Earth be like Powder; for they cannot dispense with any Wet till the Sun begins to grow powerful with us, and can dry it immediately. In *May* give them fresh Earth and they may be transplanted at that Season, but without disturbing the Roots: But the best time of the Year for that Work is the beginning of *August*, when they will best be disposed to make fresh Roots; and this must be done about ten Days before they are set into the House, for the open Air helps them to strike the Roots, as I shall endeavour to prove.

I once had some Off-sets and Branches of *Aloes* sent me in *May*, without any Roots; and after having let them lie in the Sun for three or four Days, to dry and heal the wounded Parts, I put them in *Hot Beds*, according to the usual Method; but with all the Art I could use to them, I found they sensibly declin'd, till at last they were reduced almost to nothing; I then so far despair'd of saving them, finding the Summer was almost past, that in the beginning of *August* I flung them out of my *Garden* carelessly, with some other things that had suffer'd in the same manner; but to my great Surprise, after they had lain abroad about three Weeks, they struck Roots into the Ground they lay upon, and began to shoot out fresh Leaves: By this Accident I not only saved the *Plants*, but took such Method for the Management of others of the like Kind, that now I do not know any Plants in better Health than my own; and I find the best Season for Planting the Off-sets of *Aloes* is about the middle of *July*, letting them stand abroad about ten Days, and take the Rain if possible; when they begin to strike Root, then they may be help'd with a *Hot Bed*, but not before. The Seeds of many Sorts ripen in *England*, and may be sown upon *Hot Beds* in *April*.

I observe that such *Aloes* as put out their Off-sets above Ground, *i. e.* from the side of their Stems, may be

be made to set out those young Shoots for Increase, by taking away some of the under Leaves which grow next the Earth; for from those places where the Leaves are grown, will always shoot forth young *Aloes*; but this Work should be carefully done without bruising the Stem or other Leaves, and at such a time in the *Summer*, when the *Sun* is in its greatest force: For altho' the Leaves will easily peel from the Body of the Plant without breaking, yet there will be a Moisture remaining about the Part they were join'd to, which would breed Moldiness, and be apt to rot if it was not quickly dry'd up.

This and all other *succulent Plants* are so sensible of the least Bruise, that I have known many die by that Accident; to pinch one single Leaf will mortifie a whole *Plant*, unless the bruised Part be presently cut off.

We may see the Figures of many Kinds of *Aloes* in *Dr. Commelin's* curious Books of *Plants*; many of which He has given us, with their *Flowers*, and are extremely well design'd. The more hardy this Kind of Plant is kept, the more apt it is to flower, which I know from Experience, having not less than twelve Sorts, which blossom with me every Year.

The *Torch Thistle*, or *Cereus*, is a *Plant* very different from any other *Tribe* of *Plants*, in that it never bears any Leaves. I have cultivated about seven Sorts of it, without reckoning those other Kinds of *Torch-like Plants*, which have milky Juice, and are reckon'd of the *Euphorbium* Race. I do not yet find that any of the *Torch Thistles* grow in any other part of the World but in *America*; nor can I learn that the *Euphorbiums* are found any where naturally growing but in *Africa*. The *Torch Thistles* are of two Sorts; some creeping upon the Ground, and the others growing upright to a great Height without Support. The creeping Kinds are more enclining to branch than the others, and take Root easily as they run upon the Ground: The Branches of the creeping Kinds are differently shaped, in that one sort pretty common in *England*, has triangular Branches,

Branches, and the other has its Sprouts divided into six or seven Angles; both these have the Edges of their Angles adorn'd with small tender Spines set together in the form of Stars: The Flowers of the first I have not yet seen, but the latter has blossom'd in *England*, which yet perhaps it would not have done without an Accident: A large *Plant* of it that stood in the Neighbourhood of a plaister'd Wall, struck its Roots into it, and soon after dying at its first Root, it remain'd some time nourished by the Wall only, and in that Condition set for Flowering: The Blossoms were very large, radiated somewhat like the *Sun-Flower*; many of the *Petals* were of a yellow Colour, with some few, towards the middle, of a fair White. This Flower stood upon the Summit of the Fruit, like those of the *Indian-Fig*; and when it opened was extremely well scented, but soon decay'd. Whoever considers that this *Plant* grows naturally upon Rocks, will not wonder at its Flowering, when it grew in Lime Morter, which comes the nearest to a Rocky Soil of any we can compose.

I have therefore chose to plant both these creeping Kinds of *Torch-Thistles* in Rubbish of old Walls mix'd with about one Third of sandy Soil, and some small Pieces of Free-Stone among it; for this Mixture will keep the Roots dry, and grow hard as a Rock, after it has been well water'd: These are both raised from Cuttings planted in this Mixture any time between *May* and the End of *July*; but we must first observe, that they lie in the Sun for a Day or two after they are cut, to heal their Wounds, and not put them into the Ground before they are dry'd, which we must also remember to do with all Cuttings of *fucculent Plants*. Plant these as I direct for the *Aloes*, upon a little Hill in the middle of the Pot, for they can hardly endure Water: Let them, after Planting, stand abroad about twenty Days to take Root before they are put into the *Hot-Bed*, for else they will be apt to shrink; and at first putting them in Pots, water them to settle the Earth, but with this Caution, that it be done when the Sun has Power enough to dry and harden the Mixture they

are

are planted in. During the Summer they may now and then be gently refresh'd; but from the middle of *September* 'till *May* I would not advise any Water: Some have planted them in light sandy Soil, and they have shot well in the *Summer*, but would seldom live 'till the *Spring*: In a word, keep them as dry as possible in the *Winter*, and let them have the open Air (after Rain especially) in the *Summer*, as much as you can give them; for 'tis what they chiefly feed upon, as we may know by their putting out of long *Fibres* from their Branches at such Seasons. This kind of Plant comes from those Parts of *America* near the *Line*, therefore are not so hardy as *Aloes*, and should be kept more in the House, and set in the warmest Places.

The *Erect*, or *Upright Kinds*, have generally much larger Stems or Branches than the others, and the *Spines* upon their Edges very strong, which are various in their Length and Colour, as the *Plants* they belong to are different; and the several Kinds of this *Plant* likewise differ in their Colour and Number of *Ribs* or *Angles*. The Upright Sorts, as I observe, never offer to put out any Branches, as long as their first Stem can preserve its Top from damage; but as soon as that is crop'd or injured, then they commonly put forth fresh Shoots near the place where it was cut or broke off, about three or four in Number, which grow upright. Sometimes the *Great Upright Torch-Thistle* will continue growing in one Stem 'till it be near twenty Foot high, without putting out any Buds but those for Blossoms: The Flowers are radiated with whitish *Petals*, which do not open 'till the Fruit upon which they stand, seems to be full grown. This Kind, as well as the others of this Tribe, is easily raised from Cuttings planted in any of the *Summer* Months, but best in *May*, to cut a Stem of any of them into pieces of six or seven Inches long, and let them lie in the *Sun* 'till their Wounds are dry; every Cutting will soon take Root if they be set in Pots of light Earth, and kept pretty dry 'till they begin to shoot, and then some of the Mixture prepared for the creeping Kinds should be put to their Roots, and as much of the light Earth

Earth as possible taken away : The Reason why I do not chuse to plant them in this Mixture at first, is, because the Roots will more readily form themselves in the other Earth. When these *Plants* begin to grow, they will put out little Buttons near their Tops, which will afterwards form so many Stems, excepting only that Cutting, which was the running Top of the *Plant*, and that will shoot upright. When the little Stems are about four or five Inches long, they may be cut ; and after drying in the *Sun*, be planted like the others.

I can say no more concerning these *Plants* than I have done of the creeping Kinds, unless it be, that what I call the *Great Upright Torch-Thistle* is easily preserv'd in any *Green-House*, and is not so hard to be kept as the others ; that is, it will thrive better in a plain sandy Soil than in the Mixture I have prescrib'd for the others of this Tribe, and will bear more Water in the Summer. The Figures of all these Kinds, I think, are nowhere cut but in my *History of succulent Plants*.

The *Melon-Thistle*, or *Echinomelocactus*, is a very wonderful Plant ; I have had only two sorts of it, viz. the large Kind growing in *St. Christophers*, and other *Caribby Islands*, which is cut in *Gerhard's Herbal* ; and the small Kind, which is figured in the *Paradisus Botavus*, named in that Book *Echinomelocactus minor Laetescens absque tomento Cylindris Strictioribus*.

The first is a solid Plant, growing out of the Ground like the Fruit of a large *Pumpkin*, but ribb'd like a *Melon*, and very green ; upon the Edges of each Rib are long *Star-like* Thorns, placed one above another, of a *Coffee* Colour : On the Top of this *Melon-like* Plant, grows a large Lump of a *Cotton-like* Substance, cover'd over on the Outside with short tender *Spines* of a *Cinnamon* Colour ; out of this burst forth the Fruit (in a hot Day) full ripe, about the Size and Colour of *Cornelian Cherries*, and commonly drop off two Hours afterward. There is now one of these *Plants* in the *Stove* at *Hampton-Court* ; it is call'd in *Barbadoes*, *Pope's-Head*, or *Turk's-Cap*.

The

The other sort seldom exceeds the Bigness of a large *Apple*, growing out of the Ground like a solid Fruit, and cover'd over with little Knots, somewhat resembling green *Berberries* set close together, and little Stars of Thorns at their Points, of a *Cinamon* Colour; the Fruit of this, like the former, cracks out in hot Weather, full ripe, of the Shape and Colour of a ripe *Berry*, but these remain upon the Plant a long time. I could have been more particular about the Description of these strange Plants, but as they will be engraved and described in my third *Decade of Succulent Plants*, I shall therefore refer my Reader to that Account of them.

These both grow upon Rocks in *America*, near the *Line*, so that they are very tender; but being humour'd in their way with a proper Soil, and kept dry, may be preserv'd as well as the *Torch-Thistles*: I have rais'd the small Kinds from Seeds sown in *Lime-Rubbish*, which I afterwards preserv'd for some time, but they were not hardy enough to resist the hard *Winter*. The best way to provide our selves with these Plants, is to have them brought from *America* well grown and kept without Water during their Passage.

The *Indian-Fig* or *Prickly-Pear*, is called *Opuntia*, and *Ficus Indica*; there are many different Kinds of this Plant chiefly growing in *America*, from whence I have had about eight or nine distinct Sorts: This Race of Plants are said to grow one Leaf out of another, but they are rather Branches than Leaves; the Leaves properly being those little Buds which appear always on those Parts where the Thorns afterward put forth. However, since what I take to be Branches have generally been called Leaves, I shall yet continue that Name to 'em. This Tribe of *Plants* then, differ chiefly from one another in the Size of their Leaves, the Colour of their Flowers and Fruit, and the Length and Colour of their Spines; the Leaves of all of them are generally of an Oval Figure; some Sorts have them near a Foot in Length; and others not more than two or three Inches; their Leaves are generally set with Knots of Thorns at certain Distances; some so very long, that the *Indians* make use of them as

Pins: Others have the Thorns so short, that they are hardly to be perceiv'd, and those small Thorns make the *Cow-Itch*, and can hardly be got out of one's Flesh in a Month, if they are not carefully sought after at first: In this Tribe the Fruit always appears before the Flower; and when it seems to be full grown, the Blossom opens at the End of it, with about ten *Petals* and a Cluster of *Chives* in the middle: This Flower always opens in the Heat of the Day, and shuts up when the *Sun* leaves it: When the Fruit is ripe it is generally of a strong red Colour, and has this Singularity in it, that if it be eaten, it will make the Urine of the Person as red as Blood, but without any ill Effect; the Flowers are commonly Yellow, excepting one sort, which bears Scarlet Blossoms, and is more tender, and hard to be kept than any of the others, and very apt to rot: Some of them delight to creep upon the Ground, others grow more upright; but all of them delight in stony Places and Rocks; therefore I give them Earth made with Lime-Rubbish and sandy Soil in equal Quantities, planting them in Pots, as I do the *Aloes*, upon little Hills rais'd above the rest of the Earth; they may for the most part be water'd like the *Torch-Thistles*, and should have Warmth answerable to the Climates they come from. We have a small Sort which comes from *Italy* with round Leaves, that will stand abroad all *Winter*, and bear Fruit plentifully; and the *Carolina* Kind, and the *Virginia* Sort, will likewise live out of Doors under the Shelter of a warm Wall; these are all raised by planting single Leaves about two Inches deep in Pots of the prepared Earth, (after their Wounds are dry'd) and letting them stand abroad 'till they strike Root, before they have the Help of a *Hot-Bed*: And I observe, to set them upon Leads, or some Stone Pavement, expos'd to the *Sun*, contributes to make them shoot with greater Vigour: The Plantations of the Leaves should be made in the *Summer* Months, and they should be housed with the *Aloes*.

The *Ficoides* is a Plant so different from other Kinds, that Authors have greatly varied in the Name of it; some

some esteem it like the *Crisanthemum*, or *Corn Marygold*; others make it a Diminutive of the *Opuntia* or *Indian-Fig*; and indeed it has this likeness to the latter, that the Fruit is always form'd before the Flower opens, and is not unlike a *Fig* in its Shape: The Flower is radiated somewhat like the *Marygold*, and therefore the *English Name* I give it in my *Decades of Succulent Plants*, is *Fig-Marygold*, which in my Opinion is a Name in our Language as proper for it as *Ficoides*; the Leaves of this *Plant* are always succulent, and it is rare to find one in this numerous Tribe that has not conjugated Leaves, that is, Leaves set on in Pairs at the Joynts.

In the *Culture* of fifty sorts of this *Plant*, I do not remember to have met with one that was not a Native in *Africa*, chiefly about the *Cape of Good Hope*, from whence we receive them; they commonly grow in stony or rocky Ground, in such Places where they have not much Wet, and are easily propagated either from *Seeds* or *Cuttings*: The *Seeds* may have the help of a moderate *Hot Bed*, if they are sown early in the Spring; but the *Cuttings* being planted in a natural Bed of Earth in *May* will prosper very well, and be fit to put into Pots the *August* following, in which Condition they may yet remain abroad till about the 20th of *September*, for they delight in the open Air, and are not easily overcome with small Frosts. As to the time of their Duration, I find many of the Shrub Kinds require to be renewed every second or third Year, and likewise the Running or Creeping Kinds; for *Plants* of three Years old often drop off; or if they live, are generally ill-shapen and ragged; it is practised in some places to raise these *Cuttings* upon a Bed made with *Tanner's-Bark*, which is a Mixture that affords a gentle Heat for three or four Months, without ever burning; therefore it would be of great use to raise young *Orange-Trees* upon, or other small *Plants*: Some Kinds of this *Plant* are *annual*, and therefore must be raised from *Seeds* every Year, as one Sort especially, which of late has been pretty frequent among us; it has at first coming up, Leaves somewhat like those of the *Arrow-Head*, cover'd

with little Blisters of clear Juice, which appear like so many Diamonds, and give a notable Lustre when the *Sun* shines upon the *Plant*; but as this *Plant* grows bigger, the *Leaves* grow smaller and change their Figure; it puts out many *Branches* cover'd with transparent Blisters, and Blossoms about *September*, bearing small white Flowers; but this, like other *Annuals*, will stand the *Winter*, if we raise young *Plants* of it about *July* or *August*, that do not attempt to blossom in 3 or 4 Months. There is another Class of the *Fig-Marygold*, which are *Dwarfs* and *Aloe-form'd*, growing always near the Ground without branching; most of them will remain five or six Years without renewing, but may perhaps be subject to lose some of their *Leaves* lying next the Earth, if the Surface of the Earth is not cover'd with sifted Lime-Rubbish, which contributes to suck up the Wet, and keep the *Leaves* from rotting; these Dwarf-Kinds have commonly the most succulent *Leaves*, and therefore are more endanger'd by Wet than the others; so that I always plant them upon little Hills in the middle of the Pots, as I have advis'd for the *Aloes*: So likewise some of the creeping Kinds, that have very succulent *Leaves* and tender *Stalks*, should have the top of the Earth they run upon cover'd, with a thin Coat of Lime-Rubbish, or Sea-Coal Ashes, to prevent their rotting by too much Wet: The Earth for every Kind of this *Plant* should be light and sandy, with about one fourth Part of Rubbish among it.

The *Shrub* Kinds, which have their *Stalks* woody, will bear moderate Waterings; but the others, which are more succulent, must have very little Water. This Tribe of *Plants* should always have the Advantage of the *Sun*, for they will never open their Blossoms without it, excepting two Kinds which only flower in the Night. As I have already publish'd the Figures of many of these *Plants*, and am still about engraving many more of them in the *History of Succulent Plants*; so I shall refer my Reader to that Work for their particular Forms and Uses; the *Cuttings* of these *Plants* should not be planted before their wounded Parts are dry.

Wc

We have great Varieties of *Sedums*, or *House-Leeks*, from the *Cape of Good Hope*, which are not less beautiful than the *Fig-Marygolds*, and are easily propagated by the same Means. Dr. *Commelin* has given us the Figures of several of them among his *Amsterdam Plants*, and therefore I shall say little relating to them; but the *Tree Kind*, or *Sedum Arborescens*, which is the largest of them, I cannot well pass by, without taking notice of it, as one of the most beautiful *Plants* belonging to the *Green-House*, especially that sort of it which has its Leaves variegated with Green and Yellow, and also has very often those Leaves tip'd with Purple; it loves a light sandy Soil, and is easily propagated from Branches set in the Earth in any of the *Summer Months*, giving them very little Water, and as much Air and Shade as possible in the *Summer*, and no Water at all in the *Winter*. I observe, the Method I prescribe for them in the *Summer*, contributes to make them more beautiful in their Leaves than those that are drawn under *Glasses*, or exposed to the *Sun*, which is a common Error: In a word, every Plant that feeds upon the Air, as this does chiefly, must be treated in the same manner, if we have a mind to keep them in their best Colours; for too much *Sun* to *Aloes*, and such like *Plants*, is apt to change the Colour of their Leaves.

The greatest Varieties of the *Euphorbium* that I have yet seen are in the *Amsterdam Gardens*; they are in Shape and Manner of Growth very like the *Torch-Thistles*, but have not Star-like *Spines*; however they do not want some Thorns to defend their Edges, which vary in their Figures as the Plants are different: All this Race abound in poisonous milky Juice, which flows from them in great Abundance when they are wounded; so that the Cuttings taken from them for Increase, must be well dry'd in the Sun before they are put into the Earth. The Mixture which I direct for the *Torch-Thistles* is the most proper for this kind of Plant, which delight in rocky Soil, and requires very little Water; these are most of them very tender, like the *Torch-Thistles*, and may be kept in the House all the Year about, and stand

stand in the warmest Place of it: We may raise them in any of the *Summer Months* with the Help of a *Hot Bed*.

The *Fritillaria Crassa* is a small Creeping Plant, imitating, in the manner of its Growth, the *Torch-Thistles*, shooting one Branch out of another: It has neither Spines nor Leaves that ever I could discern, but bears very large Flowers about four Inches over, speckled with Black and Yellow, like the Belly of a *Toad*; and one Sort has its *Petals* cover'd over with purplish Hair or Wool: These Flowers, when they open, have a very ungrateful Smell like *Carrion*, and soon are cover'd with little *Insects* about the Centre of their Blossoms. The Stems of the smallest Sort are generally of a brownish Colour; but the larger Kind has its Stems very green, if the Plant be in Health: See the Figures of both these Kinds in the *Hort. Lugd. Bat.* and Dr. *Commelin's* Book of *Amsterdam Plants*; We may easily propagate these Plants by planting their Branches in a Natural Bed of Earth, any time between *June* and *August*, and they will soon be fit to plant into Pots; the most proper Earth then for them, is that directed for the *Aloe*: These Plants are very apt to rot, and therefore must be kept dry in the *Winter*, and have a warm Place in the *Green-House*.

I have now given my Reader sufficient Instructions for the propagating of *Exotick Plants*; and if he should meet with other Kinds than those I have mention'd, I doubt not but he may readily cultivate them, if he discreetly consults the Directions I have given him in this Work.

CHAP. VI.

Of the GENERATION of PLANTS.



AS the Generation of *Plants* is yet new enough to the World to admit of a further Explanation than what I published in the First Part of this Work, I shall therefore give my Reader the Figures of the Generative Parts of *Plants*, as I have observ'd them with the *Microscope*.

Plat. II.

Plate III.

Fig. VIII.

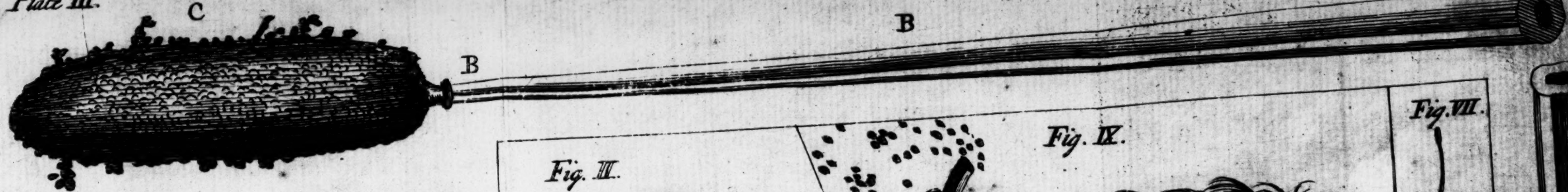


Fig. IV.

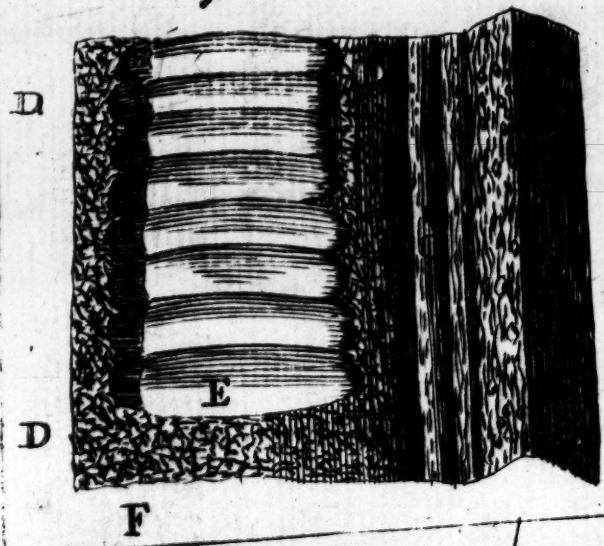


Fig. II.

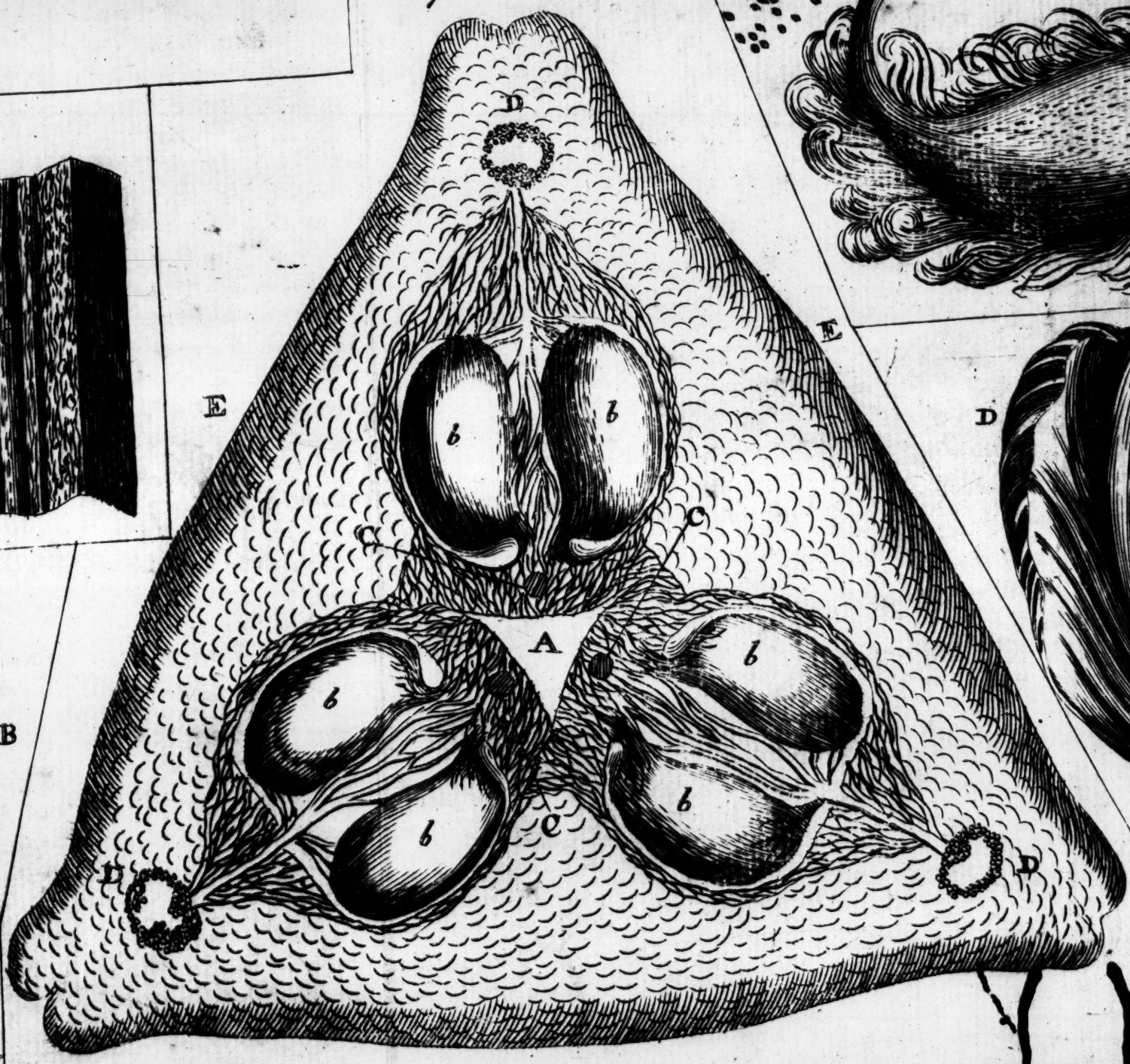


Fig. IX.

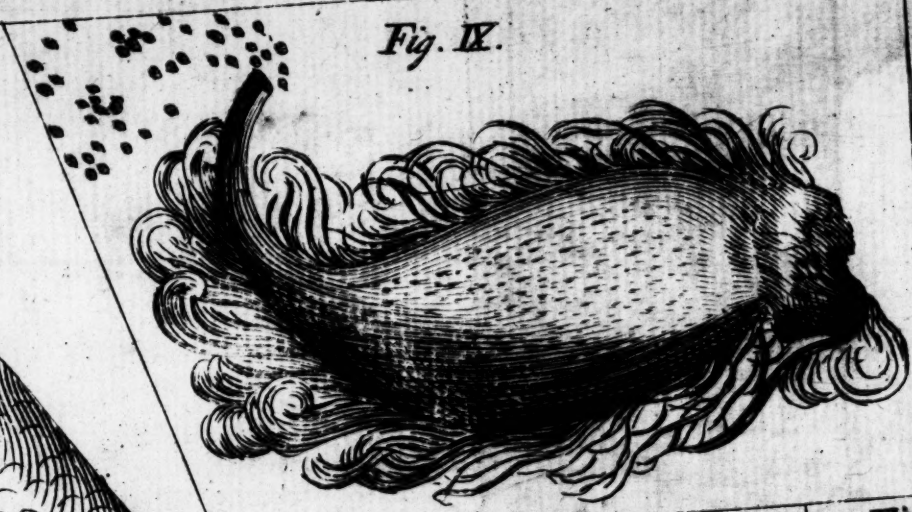


Fig. VII.



Fig. V.



Fig. VIII.

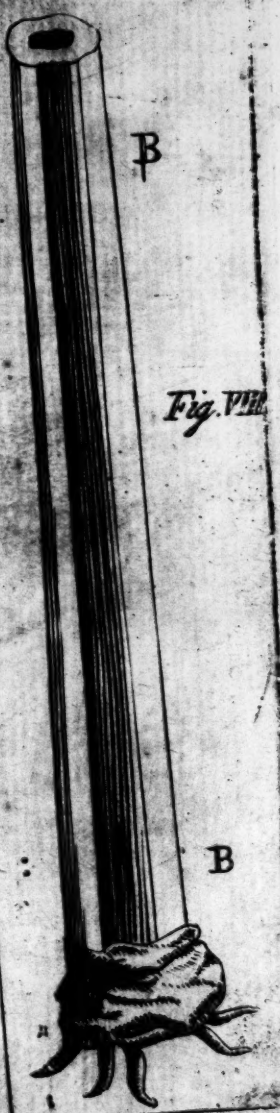


Fig. I.

Fig. III.



Fig. VI.



Plate II. Figure I.

- A The *Pedicile* or *Foot-stalk* of the *Tulip* Flower.
 B The *Pistillum* of the same.
 C One of the *Stamina* taking Root in the *Pedicile* of the *Tulip*.
 D The *Apex*, or Head of the *Stamen*, which encloseth the *Farina Fecundans*, or *Male-Seed*, in two Cells, which burst open when they are ripe.

Fig. II. Shews the *Pistillum* or *Uterus* of the *Tulip*, cut Horizontally and magnified with one of *Campan's Microscopes*.

- A The Cavity of the *Vagina*; the *Tunick* of which Passage or Cavity is composed of very small Vessels, which are continued into the several Coats of the *Ovaries*, and the Eggs within them mark'd b b b b b b; all these Vessels seem to take their Rise from three larger Pipes, C C C, thorow which the Sap ascends from the Root in Steam or Vapour.

DDD Shew three large Vessels (whose Sap is in Figure of small *Globules* of a bluish Colour) thorow these Vessels the Sap descends in Liquor.

These large Pipes put forth Branches of Vessels about twenty times less than themselves, which passing horizontally thorow the several *Ovaries*, are divided into smaller *Fibres*, and at length are lost into the *Tunick* of the *Vagina*; ----these are all of a pale blue Colour.

- EE Direct to the fleshy Part, which seems to be made up of many transparent Protuberances of a pale yellow Colour, lessening themselves as they come nearer to the outward Coat of the *Pistillum*.

Fig. III. Shews the *Pistillum* or *Uterus* of the *Tulip* split lengthways at A, wherein are discover'd two of the *Ovaries* on each side the Passage of the *Vagina*.

- B The *Apex* flinging out its Dust which falls upon C the outward *Ostium* of the *Uterus*, composed of spongy Folds, which emit a gummy Liquor.

- D One of the *Petals*, or *Flower-Leaves*, taking Root on the *Pedicile*. N. B. This Figure is not magnified.

Fig. IV. Shews part of the *Pistillum*, split like that in the former Figure, but magnified.

A Is

A Is the Cavity of the *Vagina*, into which the *Farina* is supposed to fall.

C Is the Passage of one of the Vessels mark'd C in the second Figure.

DDDD The Tunick of the *Ovary* composed of many small Fibres.

E The Eggs as they are fastened to the *Ovary*.

F A slender Fiber passing lengthways thorow the *Cap-sula*, and seemingly binding the Eggs together.

Fig. V. Is the *Matrix* of the single *Anemone* surrounded with its *Stamina* and *Apices*; it is to be observed, the Eggs of this Flower are naked, standing on the Outside of a little Button rais'd in the middle of the Flower.

Fig. VI. The Button with the Eggs on its Outside split lengthways.

Fig. VII. **A** is a *Stamen* with its *Apex* of the *Anemone*, of its natural Size.

B One of the Eggs or Seeds of the same taken off from the Button.

Fig. VIII. The *Stamen*, with the *Apex* of the *Anemone* magnified.-----In this Figure, at **A**, we see the Root of the *Stamen*.

BBBB The length of the *Stamen*, from its Root to the *Apex*, whereby it appears to be a hollow Tube.

C The *Apex* cover'd with its *Farina*.

Fig. IX. Shews us one of the Seeds or Eggs of the *Anemone* magnified, whose outward Coat is cover'd with Capillary Vessels, curl'd and running into one another, with a View of the Neck or Passage, into which the Male-dust is supposed to fall.

So have I now compleated the Work I promis'd in my Title Page, and have endeavour'd to give something new in every Part of the *Art of Gardening* which I have treated of.

F I N I S.

4

ina

the

any

ap-

led

he

ut-

he

de

ne,

om

me

ot

he

th

er,

he

ny

ng

I